News about

B. F. Goodrich Chemical *raw materials*

extra advantages with these 3 OUTSTANDING PLASTICIZERS *for Hycar nitrile rubbers*

THESE three plasticizers are designed to improve processing *and* end products. Check over their many advantages and see how they can benefit your operations For further information, please write Dept. HB-4, B. F Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco In Canada Kitchener, Ontario.

Good-rite GP-261

A balanced dioctyl phthalate plasticizer which offers many advantages over lower phthalate types at essentially no increase in cost. It is less volatile—provides better retention of physical properties in high temperature service. It also provides improved tensile strength and elongation with no sacrifice in hardness, compression set or oil resistance.

Good-rite GP-233

A dioctyl adipate which is outstanding for low temperature applications. Its volatility is low and its efficiency high. It has good processing characteristics.

Hycar 1312

A liquid nitrile polymer which is an excellent non-migrating, non-extractable, non-volatile polymeric-type plasticizer. Hycar 1312 improves the flow, extrusion and calendering properties of stocks and produces compounds with excellent roll building and knitting characteristics.

Relatively small amounts of Hycar 1312 reduce the viscosity of uncured compounds. This effect approaches peptization and is useful in production of sponge, friction compounds and other operations.

Hycar Reg U S Pat Off
American Rubber

Good-rite REG U S PAT OFF
CHEMICALS

B. F. Goodrich Chemical Company

A Division of The B. F. Goodrich Company

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

We'd like to tell you more about how we serve our Philblack* customers and prospective customers.

Our Sales Service Laboratory in Akron is a good example. We have an outstanding backlog of experience with carbon black in rubber compounds. We've struggled with more problems than you might guess. We've come up with plenty of sound, workable solutions, too.

Of course, we don't know all the answers . . . who does? But we are eager to tackle the troubles you may be having in your plant right now with some old or new application of carbon black and rubber.

This is your invitation to benefit from our unmatched experience with oil furnace blacks in rubber compounds. We are glad to make available to you the considerable resources and ingenuity you'll find in our Philblack Sales Service Laboratory.

We suggest you discuss your problems with our technical representative or write Phillips Chemical Company, 318 Water Street, Akron 5, Ohio.

*A TRADEMARK

First floor at 318 Water Street, Akron, is a customer service laboratory devoted to helping customers get the most out of Philblack in present and proposed applications. Upper floors house Philblack Sales personnel and a laboratory for studies on the fundamental structure of carbon black.

The Model B Banbury mixer, *left,* and the **angle abrader,** *right,* are typical of the full range of equipment in the new Philblack Sales Service Laboratory.

Know the Philblacks! KNOW WHAT THEY'LL DO FOR YOU!

A **Philblack A FEF Fast Extrusion Furnace**
Ideal for smooth tubing, accurate molding, satiny finish. Mixes easily. High, hot tensile. Disperses heat. Non-staining.

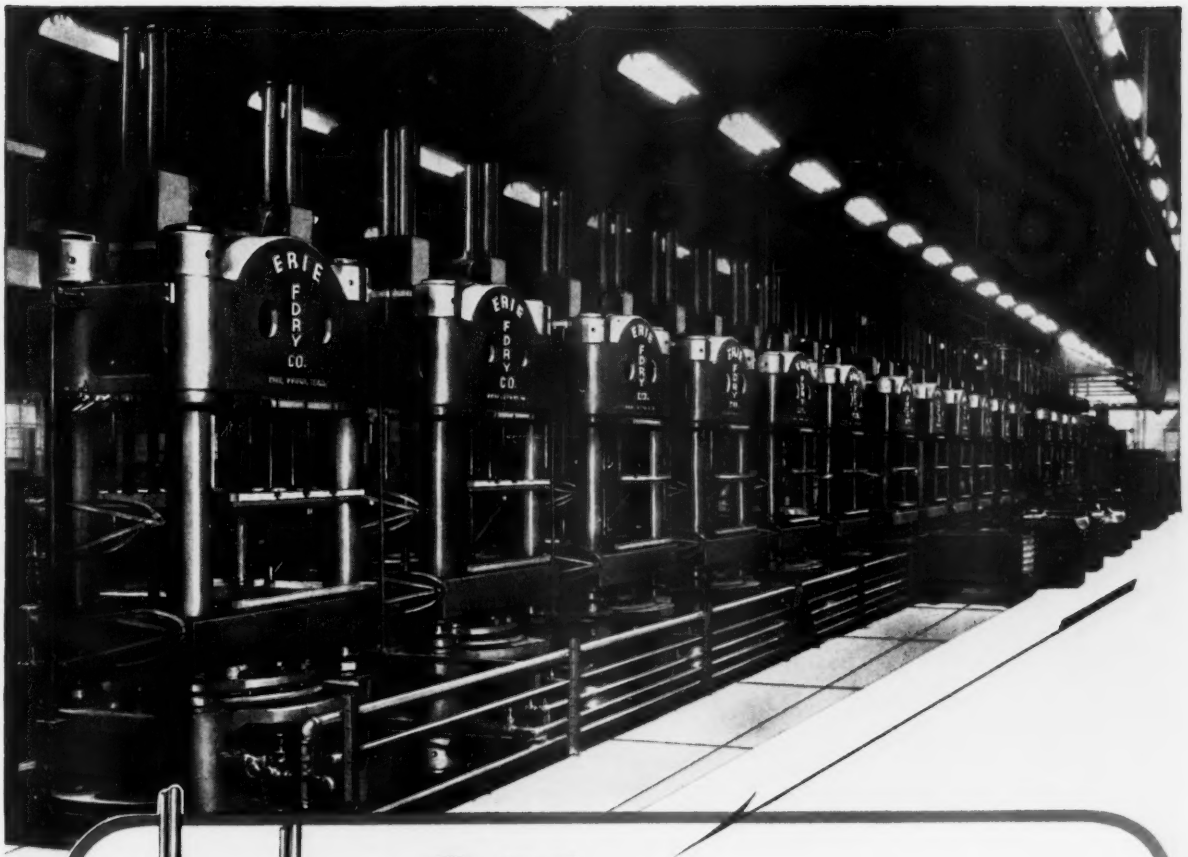
O **Philblack O HAF High Abrasion Furnace**
For long, durable life. Good electrical conductivity. Excellent flex. Fine dispersion.

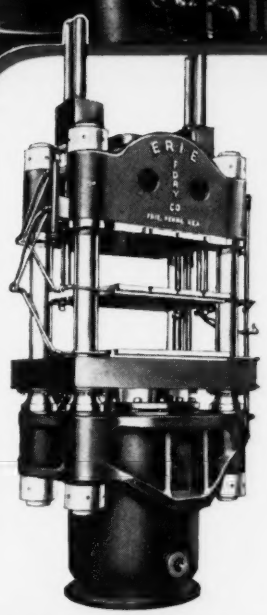
I **Philblack I ISAF Intermediate Super Abrasion Furnace**
Superior abrasion resistance at moderate cost. Very high resistance to cuts and cracks. More tread miles at high speeds.

E **Philblack E SAF Super Abrasion Furnace**
Toughest black on the market. Extreme abrasion resistance. Withstands aging, cracking, cutting and chipping.

Phillips 66

PHILLIPS CHEMICAL COMPANY, Philblack Sales, 318 Water Street, Akron 8, Ohio. Export Sales: 80 Broadway, New York 5, N. Y. West Coast: Harwick Standard Chemical Company, Los Angeles, California. Canada: H. L. Blachford, Ltd., Montreal and Toronto.





27 ERIE HYDRAULIC PRESSES

800 TON... *for Mechanical Rubber*

THIS battery of Erie Foundry Company 800 Ton Hydraulic precision platen presses is in uninterrupted operation in the plant of one of America's leading manufacturers of rubber products. The design, engineering and construction of these presses reflects more than a half century of experience. This long experience in design and craftsmanship results in Hydraulic Presses which deliver maximum production and top quality at minimum operating and maintenance cost. Consult with us on your Hydraulic Press requirements.

ERIE

ERIE FOUNDRY COMPANY ERIE, PENNSYLVANIA

Dependable **FORGING HAMMERS • HYDRAULIC PRESSES**

25% FASTER CALENDERING

of heavy vinyl sheeting with PLIOVIC

So reads the report on Textileather Corporation, manufacturers of Tolex a new "plastic leathercloth" especially designed for use in coats, jackets and sportswear—and of other high quality, fabric-backed, heavy-gauge vinyl sheeting.

Using PLIOVIC – Goodyear's easier processing polyvinyl chloride resin – Textileather found they could operate their calenders at speeds up to 25% higher than those possible with any other resin tried. And they had no problem with the streaking, roughening or loss of gloss usually encountered in the finished sheet at such speeds.

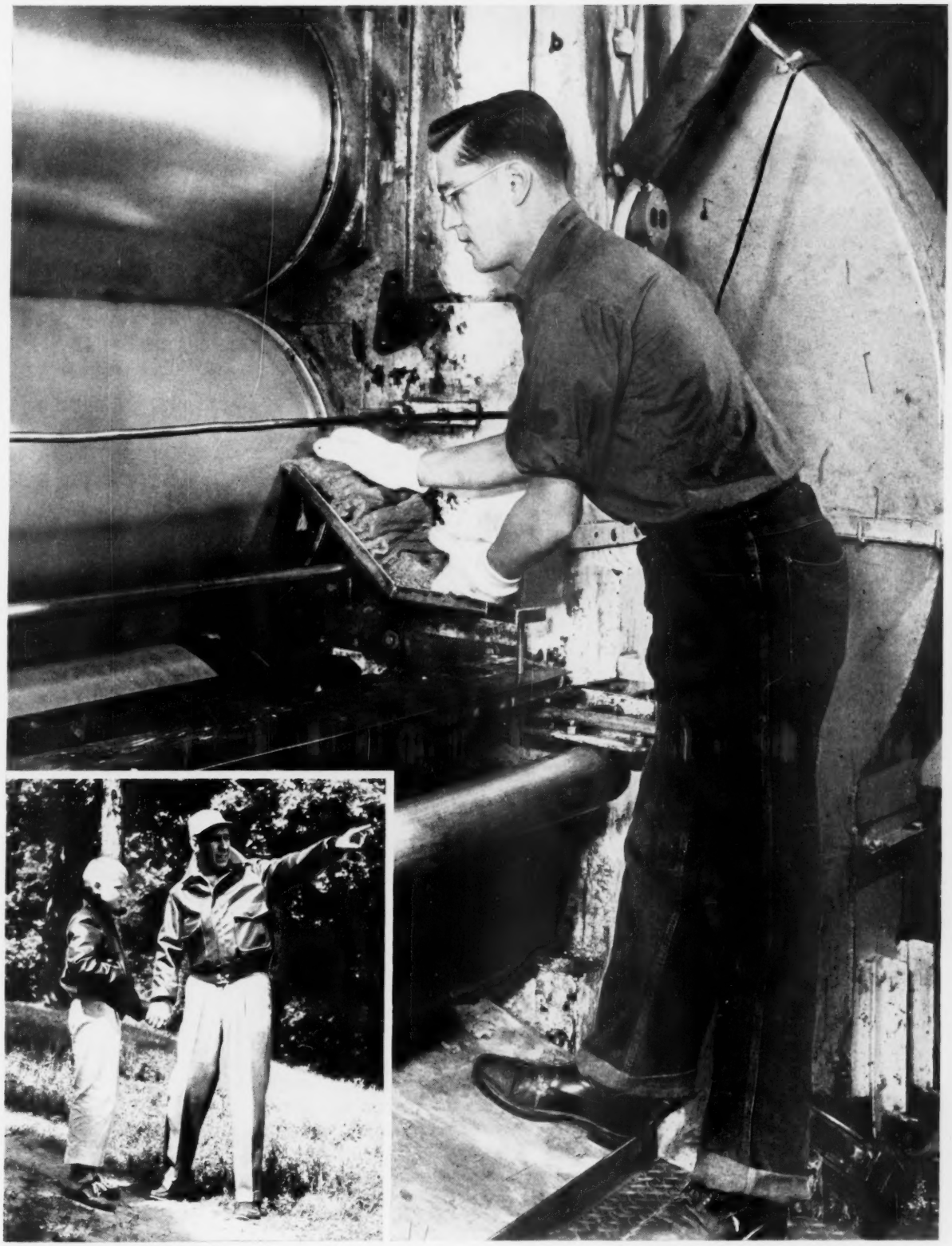
Two other advantages gained with PLIOVIC were the elimination of "fish-eyes"—hard agglomerates of unfused particles—in the sheet and the use of larger batches in the Banbury. All these added up to more throughput at lower cost, but at the same high level of quality.

Reason for this improved production with PLIOVIC is the fact that its polymerization is carefully controlled to give a particle size, shape and distribution, providing high bulk density and fast fluxing, combined with maximum physical properties.

PLIOVIC has proved itself in many plants. It can in yours. Just give it the chance. Get samples, the new technical manual and complete help, by writing to: Goodyear, Chemical Division, Akron 16, Ohio.

CHEMICAL GOODYEAR DIVISION

Use-Proved Products — CHEMIGUM • PLIOBOND • PLIOLITE • PLIO-TUF • PLIOVIC • WING-CHEMICALS — The Finest Chemicals for Industry



TOLEX MAKES these jackets soft, pliable, waterproof and highly resistant to scuffing or abrasion. PLIOVIC permits this fabric-reinforced sheeting to be calendered faster and at lower cost.

Tolex T. M. Textileather Corporation, Toledo, Ohio

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

Chemigum, Pliobond, Pliolite, Pli-Tuf, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Point for point...

CYCOLAC

A *New* HIGH-IMPACT THERMOPLASTIC RESIN

is your trump production card

1. Single uniform resin, permanently thermoplastic permitting fast molding, calendering and extruding.
2. Free from nerve or shrinkage, permitting accurate calendering and extruding.
3. High in impact-resistance and heat-distortion temperatures; low in brittle point.
4. Capable of being colored to about any opaque shade.
5. Capable of being solvent or heat-welded; can be machined much like other rigid thermoplastics.
6. Economical to form from press-polished sheets by vacuum, air-pressure, or mechanical methods over inexpensive molds of wood, plaster, aluminum, etc.
7. Very light — Sp. Gr. 1.01. Dimensionally stable, readily injection-molded.
8. Resistant to many oils, solvents and corrosive chemicals.
9. Soluble in selected solvents, for potential coatings applications.
10. Characterized by excellent electrical properties.

Marbon

MARBON CORP.

GARY, INDIANA

SUBSIDIARY OF BORG-WARNER

GET THE FACTS — *Write* TODAY FOR TECHNICAL LITERATURE

RUBBER FABRICATORS NEED ACCURATE CUTTING DIES

For Cutting

Rubber, Neoprene, Plastics, etc.
Sheeting, Foam, Sponge, Cellular,
Cured & Uncured

Gang Dies Our Specialty

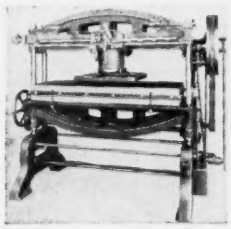
- **Accuracy to close Tolerances**
- **Durability**
- **Genuine Understanding of the problems of rubber goods manufacturers**

MALLET HANDLE DIES

PURPOSE — For those who have no machinery and do not wish to purchase any. For Cutting — Rubber, Neoprene, Plastics, etc.

ADVANTAGE — Cut direct from bolts or not.

SERVICE—One to three days.



STEEL RULE CLICKER DIES

Use On Clicker Machine or Dinker Press

PURPOSE—For Cutting Rubber, Neoprene, Plastics, etc.

ADVANTAGE — More reasonably priced than the all steel dies. Recommended for small and medium quantities where cost of an all steel die is not warranted.

SERVICE—One day service.

STEEL RULE CUTTING DIES

Used on Die Cutting Press, Printing Press or Power Press

PURPOSE — Especially suited for cutting — Rubber, Neoprene, Plastics, etc.

ADVANTAGE—Low in cost. Suitable for long production runs. It is necessary to cut from rectangular sheets which are fed into the press.

SERVICE—One day service.

ALL STEEL DIES

Use On Clicker Machine or Beam Press or Power Press

PURPOSE—For Cutting—Rubber, Neoprene, Plastics, etc.

ADVANTAGE — Cut direct from rolls without first cutting into sheets.

SERVICE—One to three day service on dies.

DIE CUTTING SERVICE

PURPOSE—For those who prefer to have their cutting done by others.

ADVANTAGE—We can die cut your product for you on our own presses rapidly and economically at a low "per thousand" cost.

SERVICE—One to three days.

Dies for cutting
Gaskets, flashing from molded parts, rubber soles, foam and sponge for furniture padding, inflated toys, clothing and footwear, etc.

SAME DAY SERVICE

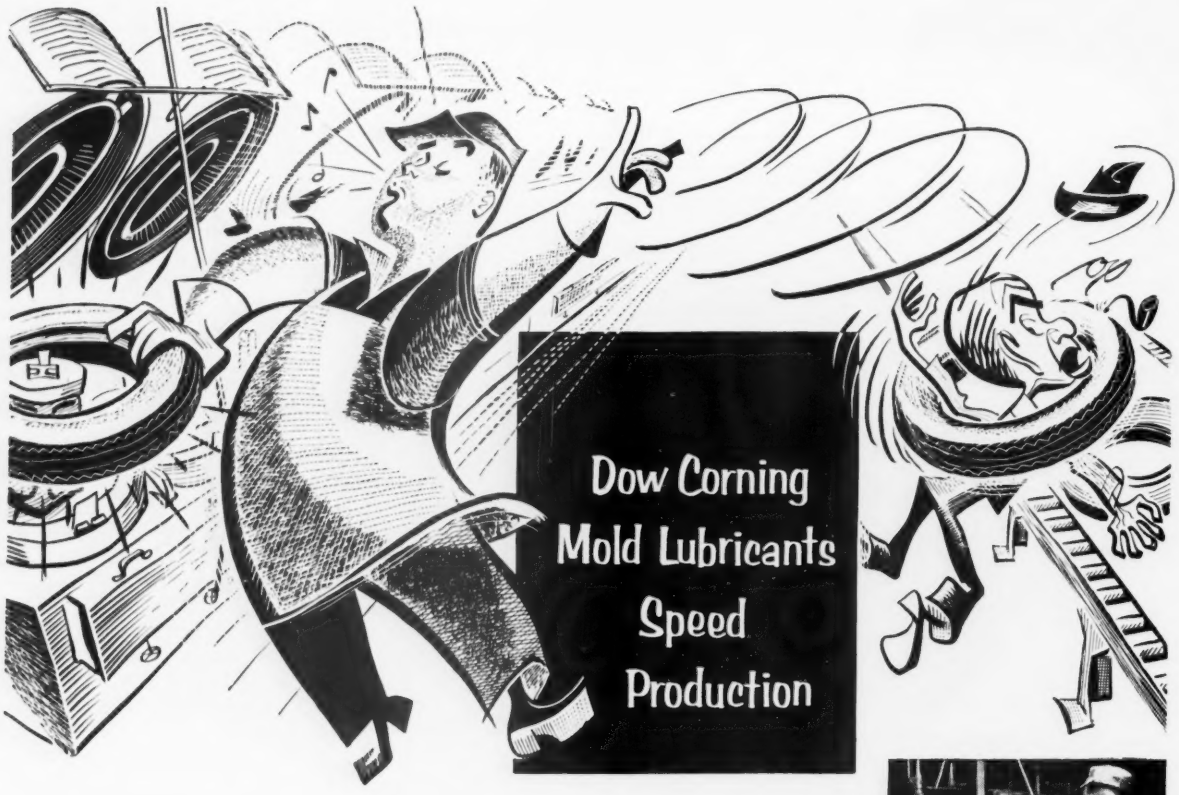
ACCURATE

STEEL RULE DIE MANUFACTURERS

24-28 West 21st Street, New York 10, N. Y. CHelsea 2-0860-1

Subsidiaries: American Fabricators; Interstate Die Cutting Co., Inc.

Intelligent Service to the Rubber Goods Industry for Over 23 Years



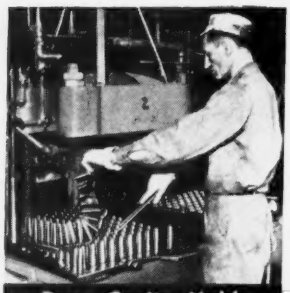
Dow Corning Mold Lubricants Speed Production

Production of salable moldings increases when you use Dow Corning silicone release agents. Rejects and scrap are reduced to the vanishing point.

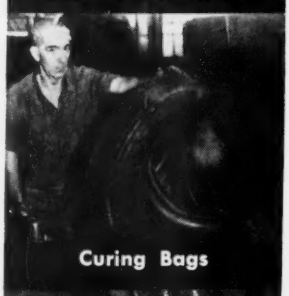
That's because silicone mold lubricants retain their "slip" at molding temperatures. Cavities fill quickly and completely, even with heavily loaded stocks. Complicated shapes and deep draws strip easily without tearing. And because only a light application is required, non-knits, fold-overs and loose tuck-unders disappear.

Molds stay cleaner longer, too. Dow Corning silicone release agents can't break down and leave carbonaceous deposits that roughen mold surfaces or discolor white or colored parts. Closer tolerances are maintained and even black moldings take on a higher, smoother gloss than ever before.

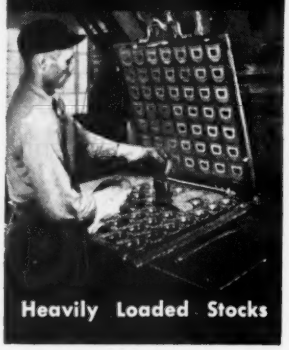
Join the steadily increasing number of molders who specify Dow Corning silicone mold release agents: fluid for green carcass, bead and parting line; emulsions for molds, mandrels and curing bags. When your production goes up and costs go down, you'll be glad you did.



Deep Cavity Molds



Curing Bags



Heavily Loaded Stocks

Dow Corning Silicones Mean Business!

For more information call our nearest branch office or write direct for Data Sheet CM-16.

DOW CORNING SILICONES

DOW CORNING CORPORATION
MIDLAND, MICHIGAN

ATLANTA CHICAGO CLEVELAND DALLAS DETROIT LOS ANGELES NEW YORK WASHINGTON, D.C. (Silver Spring, Md.)

Canada: Dow Corning Silicones Ltd., Toronto Great Britain: Midland Silicones Ltd., London France: Cie. St. Gobain, Paris

Sole makers —

Here's why you should use PLIOLITE S-6B

—in light soles

because normal processing temperatures don't darken this resin like they do most competitive rubber reinforcing resins

because pigments disperse thoroughly with a minimum of streaking and splotching

because you get adequate hardness without excessive loading and difficult mixing

You can prove these statements yourself. Write for a demonstration of heat stability of PLIOLITE S-6B

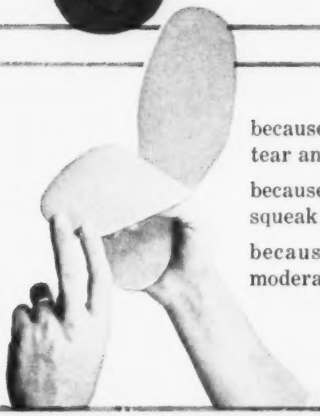
—in black soles

because of excellent abrasion resistance even at high loading with Fine Thermal Blacks

because good firmness is achieved with all types of Carbon Blacks

because quality is improved while costs are kept low

Try PLIOLITE S-6B in shoe soles to meet military specifications such as MIL-S-10047 and MIL-S-1762



—in inner soles

because you can raise your standards for hardness, tear and permanent set

because PLIOLITE S-6B eliminates crack, curl and squeak of many competitive types of inner sole

because you can gain uniform high quality at moderate cost

Chemigum, Pliobond, Pliolite, Pliovic—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Wherever rubber needs reinforcement, it will pay you to try PLIOLITE S-6B. Write for details to:
Goodyear, Chemical Division, Akron 16, Ohio

CHEMICAL GOODYEAR DIVISION

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network
THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

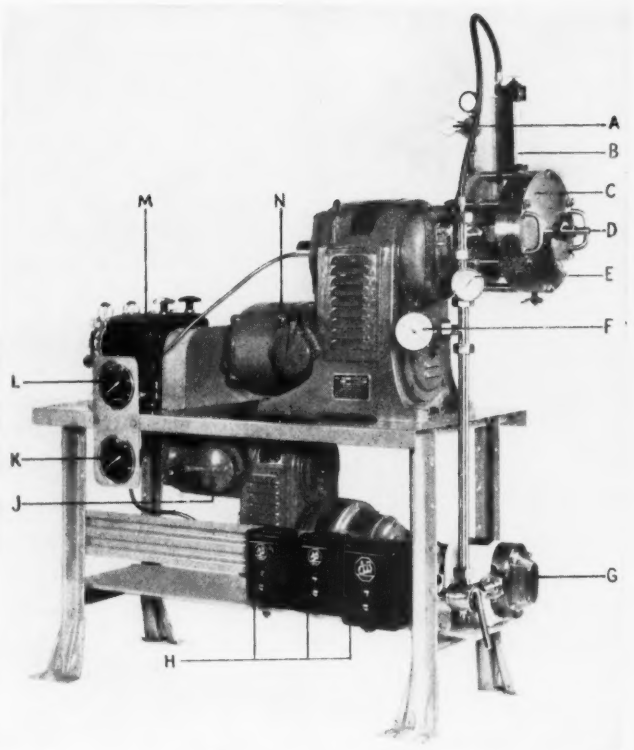
Use-Proved Products—CHEMIGUM • PLIOBOND • PLIOLITE • PLIOVIC • WING-CHEMICALS—The Finest Chemicals for Industry

FOAM RUBBER MIXING BY PUSH-BUTTON METHOD!

Continuous — Automatic!

We know this may sound a bit bombastic because foaming latex by oldtime conventional batch methods is a sticky business that takes a lot of back and brawn, and leaves plenty of room for error. But continuous, automatic, push-button mixing under fingertip control is now being provided by Oakes Continuous Automatic Mixers in large and small plants everywhere. The superiority of product is such, and the savings so substantial in so many directions, that plants wishing to maintain their competitive position in today's swiftly expanding market are finding Oakes Mixers an absolute essential.

The Oakes Continuous Automatic Mixer is capable of foaming latex to a blow-up of as much as 16 to 1, with a throughput capacity of 50 to 1800 pounds of wet latex per hour—predetermined density can be obtained at will and held uniformly. The resultant product is of exceptional quality—uniformly fine-celled and velvet-smooth, with maximum strength. Production is up to 900 pounds per hour with the smaller model, and up to 1800 pounds per hour with the larger. Savings in latex and all other formula materials, of as much as 15% have been realized; "rejects" have been reduced as much as 75%. In plants producing upwards of 1,000 pounds per hour savings in labor have been as much as six people. Foam is more stable. Injection molding is made possible. Less floor space is required; refrigerated, air conditioned rooms are unnecessary. These are but a few of the features that have made the Oakes preferred equipment.



A. Air Pressure Regulating Valve
B. Air Flowmeter
C. Mixing Head
D. Discharge Hose Connection
E. Product Thermometer
F. Pressure Gauge
G. Latex Pump
H. Starting Boxes
J. Pump Speed Regulator
K. Pump Tachometer
L. Mixer Speed Tachometer
M. Chemical Proportioning Pumps
N. Mixer Speed Regulator

Oakes Continuous Automatic Mixer

Available only through

THE E. T. OAKES CORPORATION

ISLIP, LONG ISLAND, NEW YORK

NOW FOR EXCELLENT LOW TEMPERATURE FLEXIBILITY AT LOW COST

New

DRAPEX 3.2

LOW TEMPERATURE EPOXY PLASTICIZER

Drapex 3.2, at a fraction of the cost, gives your vinyls low temperature flexibility properties equivalent to dioctyl adipate. Its low volatility and low specific gravity (.905 at 20°C.) are additional economy features.

In addition, Drapex 3.2, because of its epoxy content, offers excellent stability . . . high heat resistance, low extractability, and resistance to water and sunlight.

These advantages of Drapex 3.2 will improve the quality of your vinyls at a lower cost. Why not find out how Drapex 3.2 can work for you. Write today for Technical Bulletin 4, a working sample, and the low prices of Drapex 3.2.

"PURR-FECTION"

ARGUS CHEMICAL LABORATORY

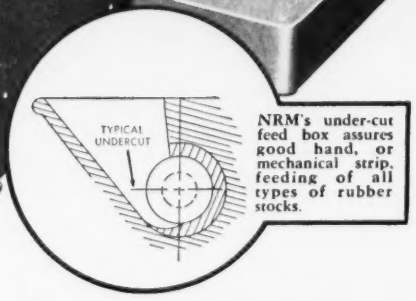
633 COURT STREET BROOKLYN 31, N. Y.

NRM

2½" RUBBER EXTRUDER

HEAVY DUTY MODEL 50

- COMPACT
- RUGGED
- PRECISE
- VERSATILE



NRM's under-cut feed box assures good hand, or mechanical strip, feeding of all types of rubber stocks.

NRM's new 2½" Model 50 extruder is designed to give the most production in the minimum of floor space. The base of the extruder measures only 19" x 23½". Its overall length is only 47¾". Its height is just 53⅛". Yet, it has a nominal capacity of 200-250 lbs. per hour and is ruggedly built to give years of trouble-free service.

The Model 50 carries all of the features that have made NRM extruders first choice for high quality, precise extrusions of all types of rubber compounds. The under-cut feed hopper — the heat treated alloy steel feed screw with hardened flight surfaces — the accurately machined cylinder with replaceable Xaloy liner — the heavy duty cone worm gear reduction unit — the extra heavy thrust and radial bearings — the sturdy fabricated steel base — all combine to give maximum, uniform production at minimum cost.

Look into the Model 50, today. Just a postcard will bring full information — promptly and without obligation.

2083

NATIONAL RUBBER MACHINERY COMPANY NRM

General Offices & Engineering Laboratories: Akron 8, Ohio

East: 384 Getty Ave., Clifton, N. J.

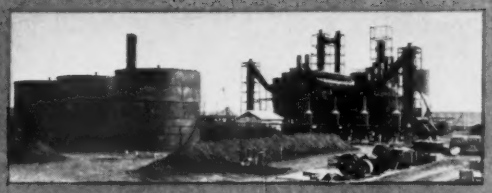
West: S. M. Kipp, Box 441, Pasadena 18, Cal.

Export: Gillespie & Company, 96 Wall St., New York 5, N. Y.

Creative Engineering

coming . . .

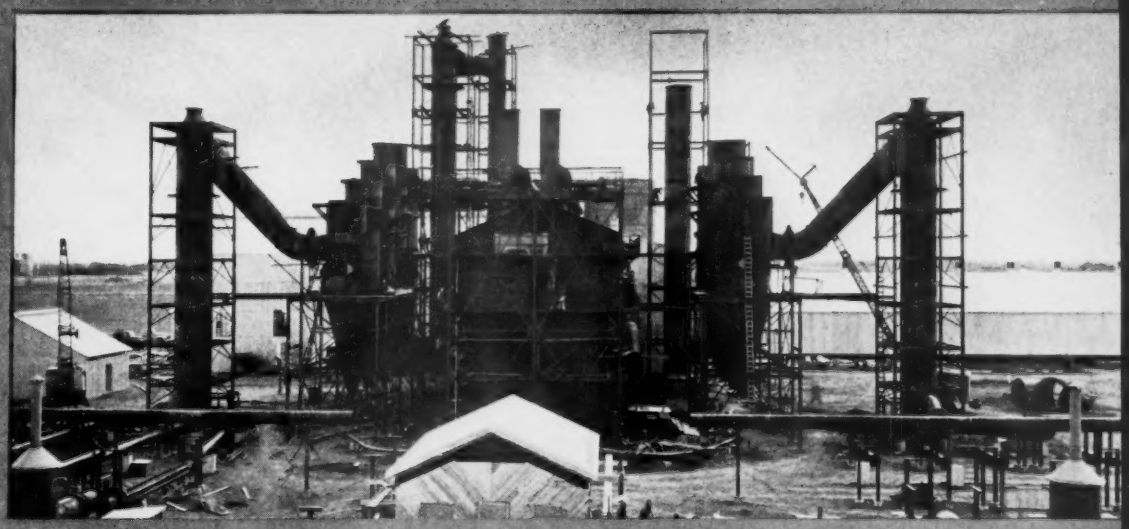
coming . . .



Coming Soon!

NEW WITCO-CONTINENTAL PLANT

PONCA CITY, OKLAHOMA



for the production of

Continex® HAF-SAF Blacks

WITCO CHEMICAL COMPANY

CONTINENTAL CARBON COMPANY

260 Madison Avenue, New York 16, N. Y.

Los Angeles • Boston • Chicago • Houston • Cleveland

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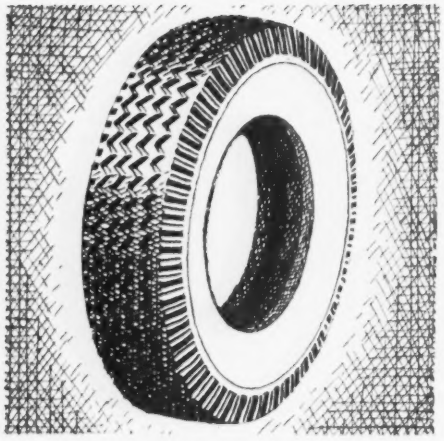
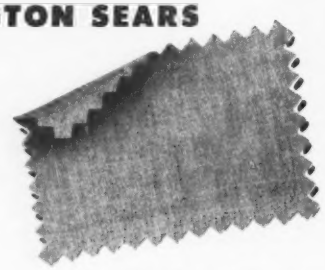
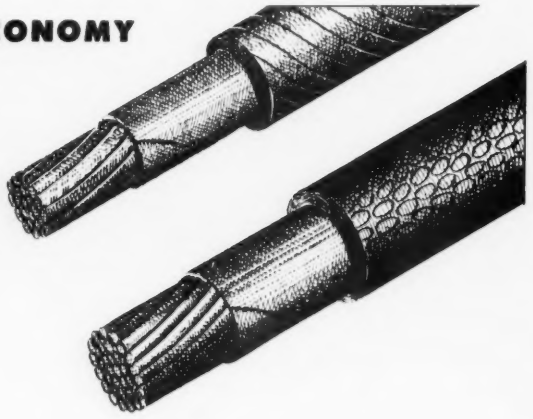


Woven for strength and abrasion resistance, chafer duck is typical of Wellington Sears reinforcing fabrics.

Wellington Sears rubber footwear fabrics include sturdy, economical and easily adhesive enameling duck for tennis and gym shoes and other rubber footwear.

YOU GET UNIFORM QUALITY AND ECONOMY WITH WELLINGTON SEARS COLUMBUS SHEETING



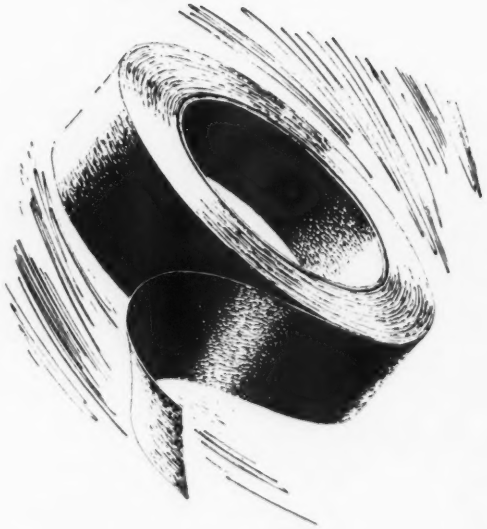


Matching quality, yard after yard, is the basis for Columbus sheeting's long-standing reputation in rubber fabrication. Lightweight and economical, it is carefully woven to yield an absolute minimum of rubberizing process rejects.

These sheetings are made 40 to 120 inches wide in weights from 2 to 5 ounces per square yard. For submarine and other cable wrapping . . . friction tape . . . heavy duty raincoats . . . hospital sheeting . . . Columbus sheeting has versatility to equal its uniformity.

Other cotton, synthetic, and blended fabrics available from Wellington Sears for coating, specialties, and mechanical rubber goods are listed at right. If it's a rubber-and-fabric problem, talk it over with Wellington Sears.

Write for your free copy of "Modern Textiles for Industry" which includes pertinent information on rubber applications. Address: Wellington Sears Co., Dept. L-2, 65 Worth St., N. Y. 13.



Superior Fabrics for the Rubber Industry

- Belting duck
- Hose duck
- Enameling duck
- Army duck
- Single and plied-yarn chafers
- Sheeting
- Airplane cloth
- Balloon cloth
- Nylon, high tenacity rayon, other synthetics and combinations.

Wellington Sears

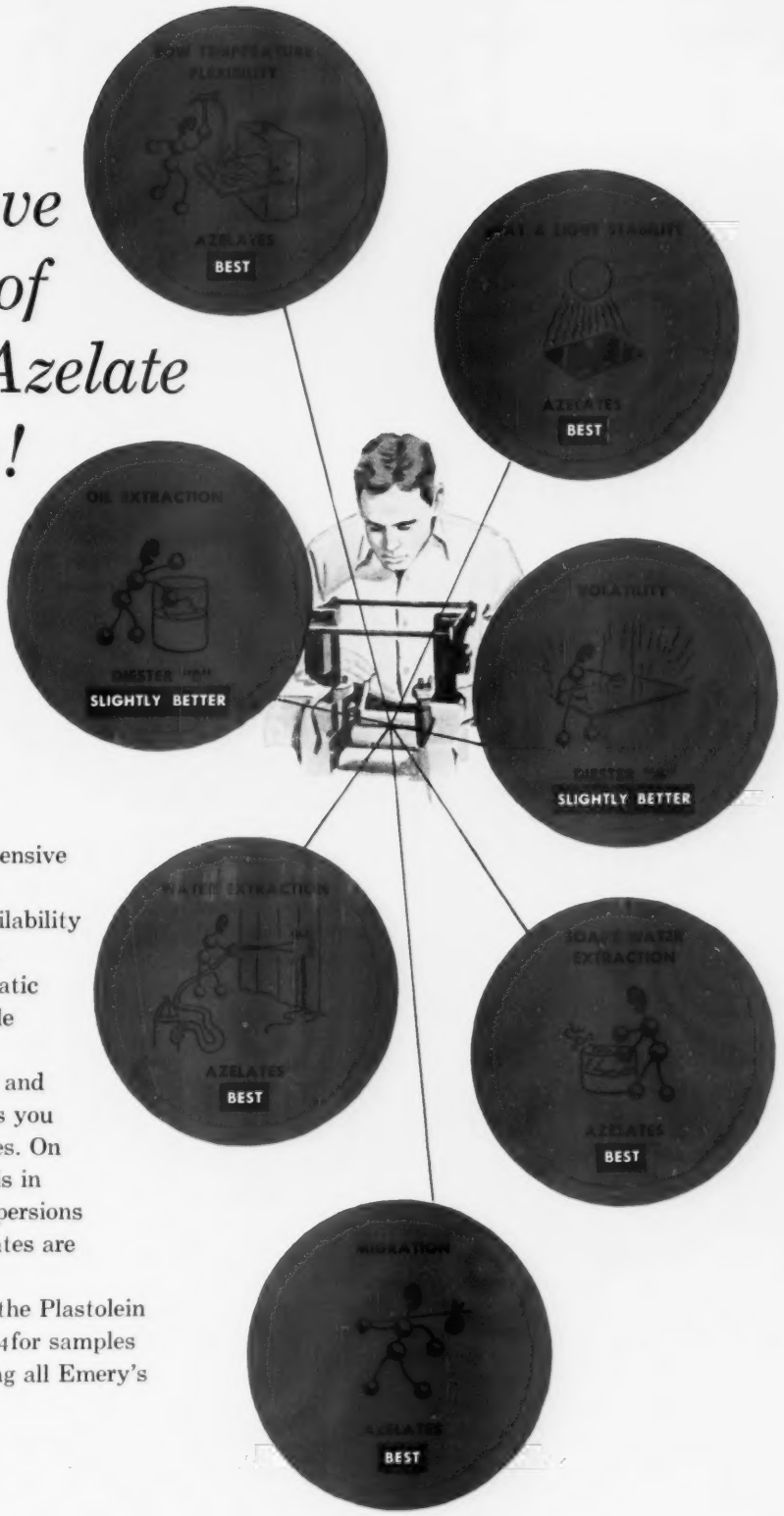
A SUBSIDIARY OF WEST POINT MANUFACTURING COMPANY

FIRST In Fabrics For Industry

WELLINGTON SEARS COMPANY, 65 WORTH STREET, NEW YORK 13, N. Y.

Offices In: Atlanta • Boston • Chicago • Detroit • Los Angeles • New Orleans • Philadelphia • San Francisco • St. Louis

Tests Prove Superiority of Plastolein® Azelate Plasticizers!



DIRECT COMPARISON PROVES ADVANTAGE OF AZELATES OVER OTHER ALIPHATIC DIESTER PLASTICIZERS!

It will pay you to start an extensive evaluation of the Plastolein Azelate Plasticizers. With availability increasing, the choice between these Azelates and other aliphatic diester plasticizers can be made on performance alone.

Check the points illustrated and see for yourself the advantages you get from the Plastolein Azelates. On a performance versus cost basis in films, sheeting, extrusions, dispersions and coated fabrics, these Azelates are your best buy today.

Don't delay . . . investigate the Plastolein Azelates today. Write Dept. U-4 for samples and descriptive booklet covering all Emery's Plastolein Plasticizers.

Emery

Fatty Acids & Derivatives
Plastolein Plasticizers
Twitchell Oils, Emulsifiers

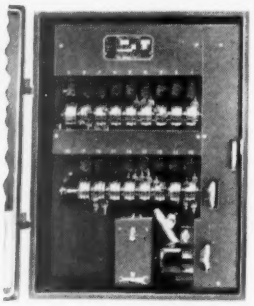
Emery Industries, Inc. Carew Tower, Cincinnati 2, Ohio

New York • Philadelphia • Lowell, Mass. • Chicago
San Francisco • Cleveland

Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles

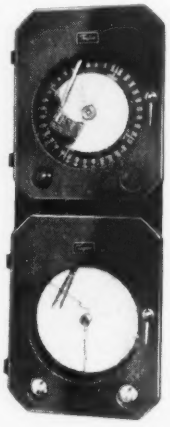
Export: 5035 RCA Bldg., New York 20, New York

These TAYLOR CONTROLS



The Taylor FLEX-O-TIMER* Controller will precisely control sequence and duration of practically any operations involving temperature, pressure, or motion, pneumatically or electrically operated, or in any combination. Standard models are available with one to eighteen separate functions. Ideal for platen presses, tire presses, etc.

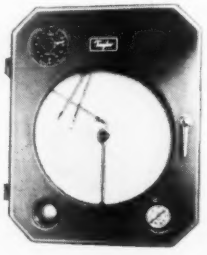
can save you money



Taylor's FULSCOPE* Time-Schedule controller will repeat exactly any predetermined program involving temperature, pressure, flow or level, or any two of these. It controls rate of rise, hold periods, and rate of fall, in any desired sequence. Ideally suited for any type of vulcanizer.

making most any Rubber Product!

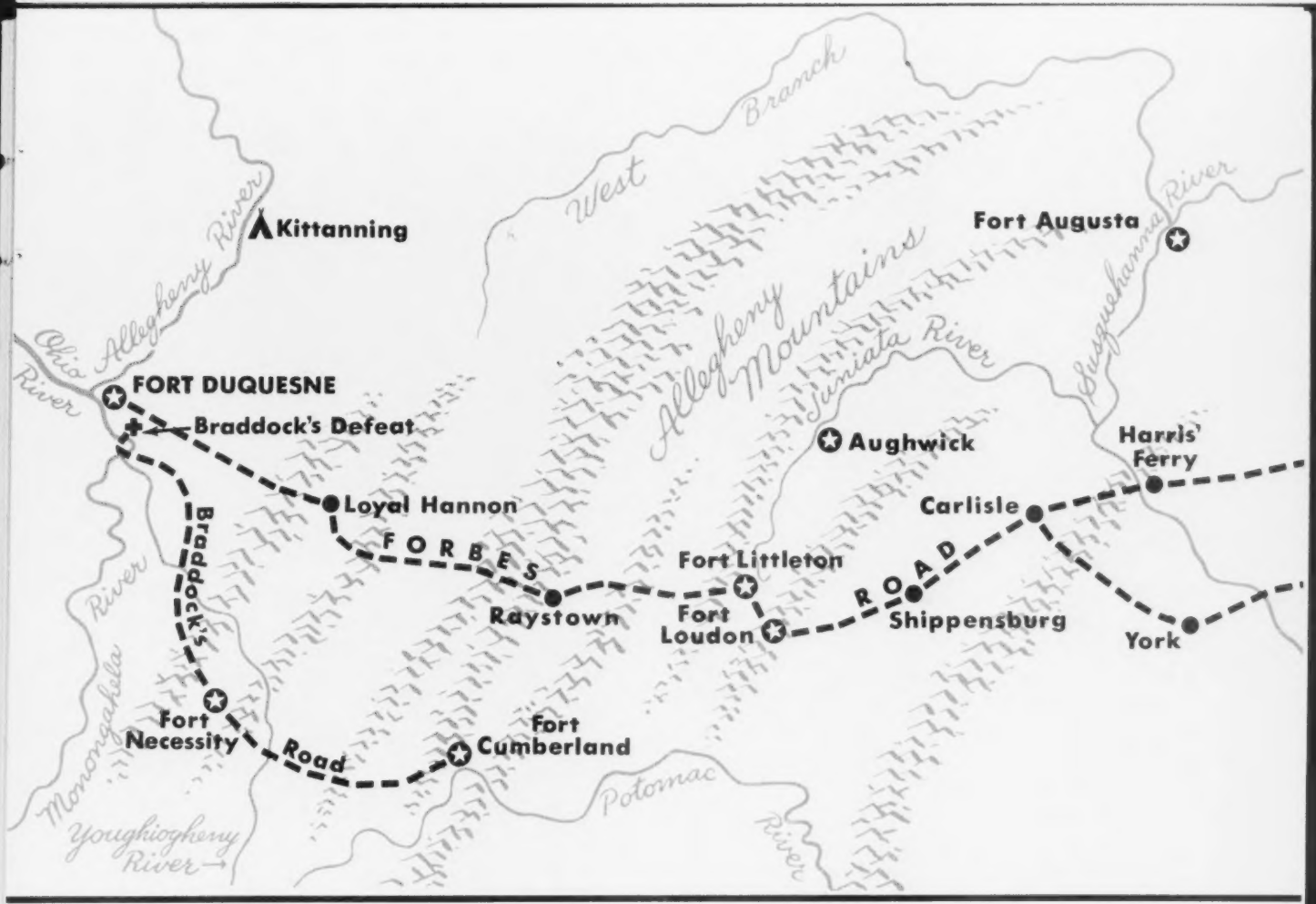
Taylor's FULSCOPE Temperature Controller with Process Timing mechanism controls temperature and curing time of cycle. Automatic timing does not start until set temperature is reached. Needs no manual attention until signal light announces completion of vulcanizing cycle. Ask your Taylor Field Engineer, or write: Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.



Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

*Reg. U.S. Pat. Off.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST



FORBES ROAD

Built in 1758 across the rugged wilderness of western Pennsylvania for use of the Forbes Expedition in the conquest of Fort Duquesne (Pittsburgh). Directed by Col. Henry Bouquet, working parties aggregating 1,400 men linked a chain of advance fortifications beginning just west of Bedford and continuing through Ligonier to Pittsburgh.

The road was a continuation of an already established route from eastern Pennsylvania that connected up Lancaster, Carlisle and Chambersburg.

For many years the Forbes Road was the chief highway between the East and the Ohio Valley, its military values supplemented by streams of emigrants and freighting trains. The original route is roughly paralleled today by U. S. Route 30.

The time of the building of the road was during the French and Indian War and its construction was ordered by the governor of Pennsylvania. The expedition was led by Brig. Gen. John Forbes, and its purpose was to provide an avenue of trade to the Ohio Valley. It became a very important highway for western emigration after the close of the war.

If you watched along the Pennsylvania Turnpike, or on U. S. highway 30, you would quickly see how far man has progressed in transporting himself and his products. East and west are connected as these greatly used routes pour thousands of automobiles, trucks and buses daily toward the Atlantic seaboard, and to the midwest and to the far-west where nearly two centuries ago men built a roadway with fortifications at strategic intervals.

Contributing to man's progress in transportation is the modern, durable rubber tire, and contributing to the long-wearing tire is the substance called "carbon black" first made on a large scale in the general area of the Alleghenies.

United Carbon Company, makers of dependable "United Blacks" is constantly improving its blacks through advanced research and engineering, so that rubber tires will always be equal to the demands of the tire industry for a constantly better product.

UNITED CARBON COMPANY, INC.

DIXIE 60 **DIXIE 20**

Two outstanding quality blacks from United's ultra modern Ivanhoe furnace black plant (near Franklin, La.).

DIXIE 60 — high abrasion (HAF) oil base black is renowned for the processing, reinforcement and stamina required by today's tire treads and high quality mechanical goods for satisfactory performance.

DIXIE 20 — semi-reinforcing (SRF) gas base black is ideal for carcass, tube, bead wire insulation and numerous mechanical rubber goods, depending on a fine balance of easy processing, moderate reinforcing, high resilience, low heat build-up, and high resistance to flex cracking.

United Blacks are dependable for uniformity and performance. Standardize on United Blacks! You will be more than satisfied.

UNITED CARBON COMPANY, INC.

CHARLESTON 27, WEST VIRGINIA

NEW YORK AKRON CHICAGO BOSTON MEMPHIS

This forging will be *Another*

BRIDGWATER TIRE MOLD

MAKING its *first* stop on the production line of Bridgwater's Athens Machine Division, in Athens, Ohio, is this rough forging for an automotive tire mold. 10 to 14 stops later—depending on its type and size — the forging will emerge, mirror-polished, precision engraved . . . a *finished* Bridgwater Tire Mold. It is ready, then, for the production line of a tire plant — perhaps yours — where its higher quality and greater workability will contribute conspicuously to smoother, speedier flow of quality tires.

Typical of our "scope" at Athens is that this Vertical Boring Mill is only one of 11 available in our plant. Typical also of Bridgwater's *continuing* efforts to streamline mold making processes, is that these mills are now being fitted with tracer control equipment which will substantially reduce the time — and cost — of the machining operation shown here.

Tire mold production at Athens is unique in that our *entire* organization of trained technicians and metalworking craftsmen — all equipment and machines — much of it our own special design — and our systems of production "flow" are unhampered by any other manufacturing obligation. In fact, the Athens Machine Company is the *only* plant in the world devoted exclusively to tire mold making.

That's why, at Athens, you can get precision-made molds of any type and size, in engraved steel, cast iron or aluminum, *faster*, and at costs that reflect favorably in a period of adjusting economy.

ATHENS MACHINE DIVISION

BRIDGWATER MACHINE COMPANY

Akron, Ohio

1896

TRIM FLASHING in a Flash and Clean as a Whistle!

Western's RMH Machine

cuts the cost of trimming as much as 75%

a factory in a foot of space!

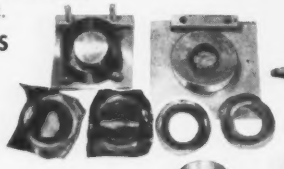
FEATURES: Cuts on replaceable hardened steel plate. Foot control speeds operation. Simple, positive pressure adjustment. ½ H.P. motor Cutting area approx. 8½" x 9".

CUTS, PUNCHES and TRIMS in one swift operation!

DIES ARE OUR SPECIALTY

2 and 3 level dies are made for RMH. Change dies in just a few seconds with positive alignment.

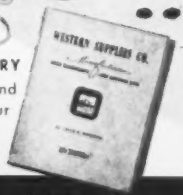
- FLASHING TRIM DIES
- CLICKER DIES
- WALKER DIES
- I. D. and O. D. DIES
- MALLET DIES
- MACHINE DIES



POSITIVE SAFETY FEATURES

Machine *cannot* trip accidentally. Operator can view entire operation.

GET THE FULL STORY on Western Machines and Dies by sending for our free illustrated catalog today.



SEND SAMPLES of parts to be cut and flash trimmed for our recommendations.

For Versatility- "Go Western"

Western SUPPLIES CO.

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CARBON BLACK Manufacturer of
A COMPLETE RANGE of
CHANNEL, FURNACE
and
THERMAL
BLACKS

CABOT

Sterling® FT
(FINE THERMAL)

Superior in Natural Rubber Tubes.

Sterling® MT
(MEDIUM THERMAL)

Sterling® MT Non-Staining
(MEDIUM THERMAL NON-STAINING)

Excellent in Mechanical and Extruded Goods.

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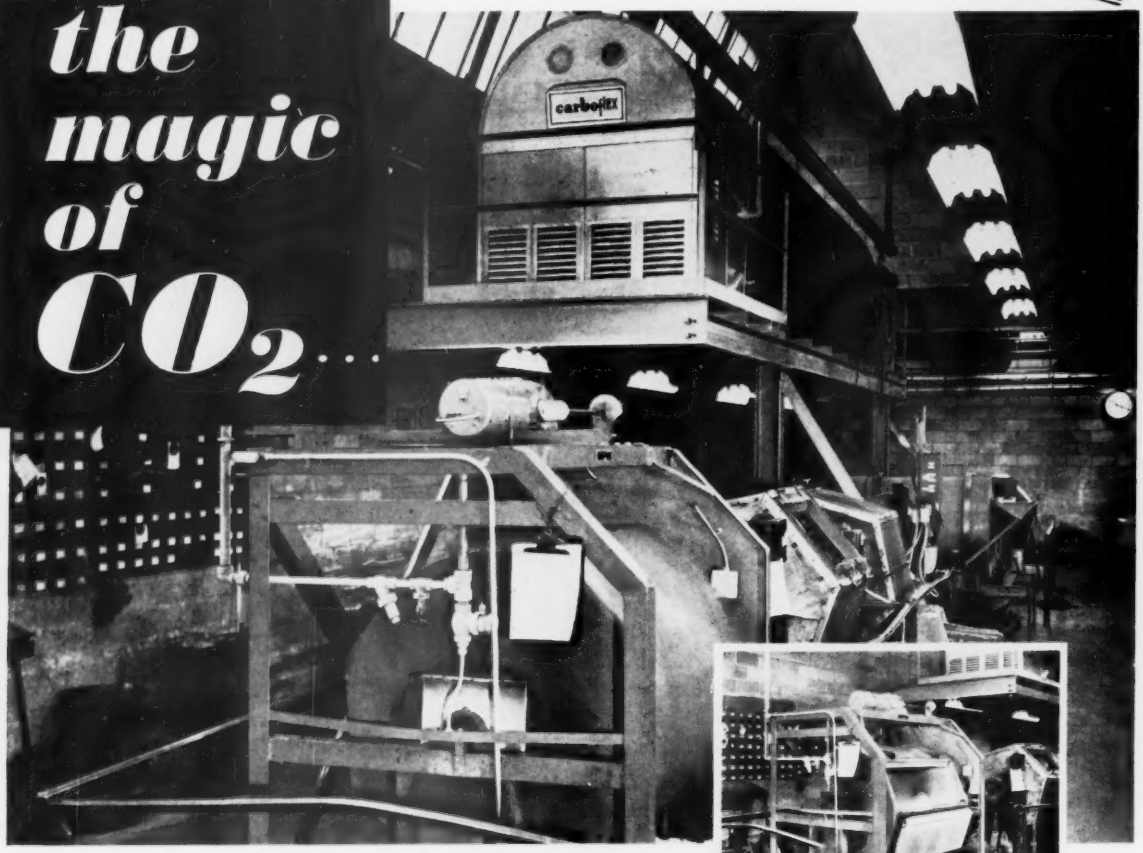
• *Consult your nearest Cabot agent for mixed carloads and truckloads, from a single Cabot plant location, of the combination of thermal and other grades of black for rubber you require.*

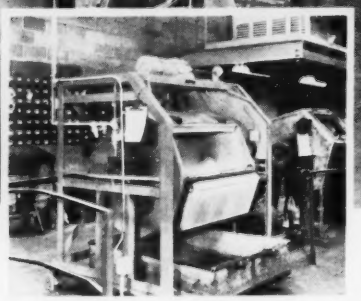
AT THE FRONTIERS OF PROGRESS YOU'LL FIND

AN AIR REDUCTION PRODUCT

the magic of CO_2...



Tumbling under way . . . Carboflex system for dispensing liquid CO_2 with Pureco's 12-ton receiver on balcony above tumblers.

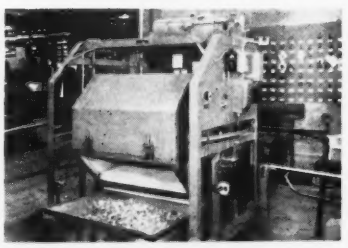


Tumbling completed . . . barrel ready to be unloaded. Interior dome to right houses thermostat control.

for faster deflashing at lower cost

Pictured here is CO_2 at work getting rid of flash on molded rubber pieces via the tumbling process. Pureco liquid CO_2 is used in this operation—however, carbon dioxide as either a liquid or solid can be employed in finishing small rubber articles. Deflashing by tumbling means lower cost and faster production. For information about convenient, *adaptable* CO_2, write to Pureco.

(all photos courtesy of satisfied user, Ohio Rubber Company, division of Eagle Picher Corp., Willoughby, Ohio)



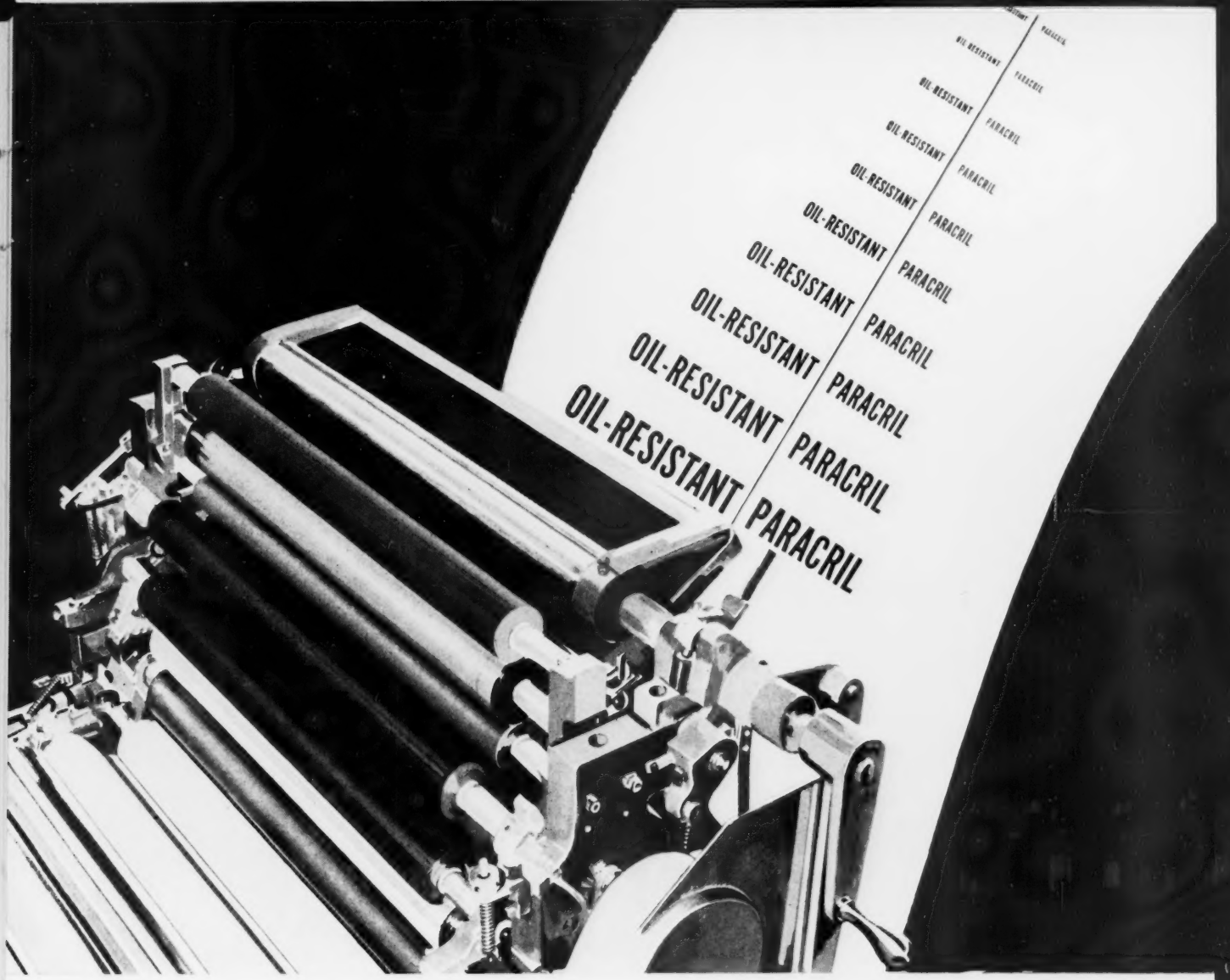
Barrel unloaded . . . note frost on frozen pieces which have been deflashed, ready for separating and washing.

PURECO

Pure Carbonic Company

GENERAL OFFICES: 60 EAST 42ND STREET, NEW YORK 17, NEW YORK

A DIVISION OF AIR REDUCTION COMPANY, INCORPORATED



In printing rollers, too...

PARACRIL "makes a good impression"!

Today's oil-based printing inks require printing rollers with maximum oil resistance as well as good resilience. The rubber roller covers must have great stability to remain free from high and low spots. And, under the stresses of modern printing equipment, they must be extremely durable for long, efficient service life.

Little wonder Paracril®-covered rollers have made such a "good impression!"

Paracril chemical rubber is *outstanding* for its resistance to animal, mineral, and vegetable oils, fats, and greases. And it combines good resilience, high abrasion resistance, and excellent resistance to aging, with extreme dimensional stability.

This unique, easy-processing chemical rubber is available in a range of property combinations, in both bale and crumb form. And it may be blended with other rubbers or plastic resins to impart special properties—used practically *wherever* a rubber or rubber-like material is needed.

Find out more about Paracril's advantages and how they can help *you*. Write on your letterhead to the address below today.

50th ANNIVERSARY 1904 1954 NAUGATUCK CHEMICAL

Naugatuck Chemical

104 ELM STREET
NAUGATUCK, CONNECTICUT

Division of United States Rubber Company

IN CANADA: NAUGATUCK CHEMICALS DIVISION • Dominion Rubber Company, Limited, Elmira, Ontario

RUBBER CHEMICALS • SYNTHETIC RUBBER • PLASTICS • AGRICULTURAL CHEMICALS • RECLAIMED RUBBER • LATICES

Original and major source of supply!

POLYBUTENES

An important raw material in a variety of mechanical rubber products

Since 1935, when Oronite Polybutene was first produced and sold, these important raw materials have become widely used in a variety of rubber products. Their light color makes them specially acceptable for compounding light-colored molded rubber goods.

PROPERTIES: Oronite Polybutenes are clear, light in color, tacky, chemically inert liquids. They will not become gummy or waxy, do not harden, darken or change in any essential property over long periods of atmospheric exposure. Oronite Polybutenes can readily be emulsified using standard techniques and equipment. In the emulsified form or in their natural form, they are useful as tackifiers, plasticizers or extenders for natural or synthetic rubber products. Available in a number of high viscosity ranges to meet your requirements. Write or call any Oronite office for Polybutenes technical bulletin.

ORONITE CHEMICAL COMPANY

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30 Rockefeller Plaza, New York 20, N. Y. • 600 S. Michigan Ave., Chicago 5, Ill.
Mercantile Securities Building, Dallas 1, Texas

AN *Invitation* TO ALL OWNERS OF BANBURY* MIXERS

FARREL-BIRMINGHAM COMPANY
INCORPORATED

CONSOLIDATED MACHINE TOOL CORP. ROCHESTER N.Y.
WHOLLY OWNED SUBSIDIARY

PLANTS: ANSONIA AND DERBY, CONN. BUFFALO, N.Y.
GENERAL OFFICES: ANSONIA, CONN.

ANSONIA, CONN.

Gentlemen:

It is our policy to offer free inspection of Banbury mixers to our customers. We like to inspect mixers at least once a year to determine the amount of wear on all gears, bearings, rotors, mixing chamber, etc. At the same time we will also inspect any other Farrel-Birmingham equipment you may have in your plant.

The inspection necessitates stopping a machine for about one hour, and having a man available to assist our inspector.

A full detailed report with recommendations will be made to you.

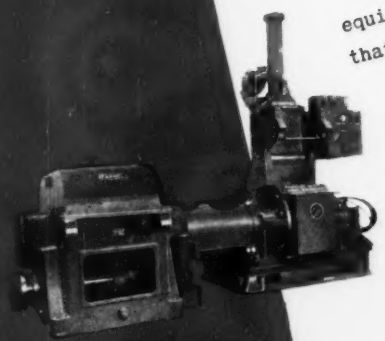
If you would like your Banbury Mixers or other equipment inspected, you may call or write and set a date that is convenient for you.

Yours very truly,

FARREL-BIRMINGHAM COMPANY, INC.

W. D. Taylor

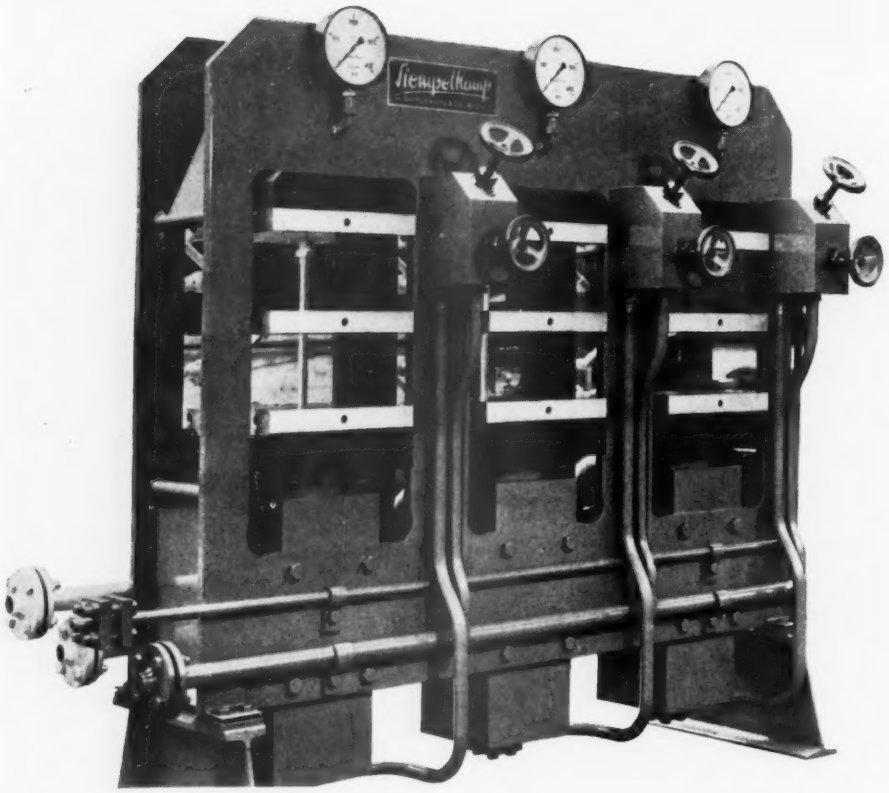
W. D. Taylor
Manager Service Department



HEAVY MACHINERY FOR THE RUBBER, PLASTICS, METAL, PAPER, SUGAR AND OTHER INDUSTRIES
ROLLS • CASTINGS • WELDMENTS • GEARS AND GEAR DRIVES

FB-894

*Trade Mark



This stripped multiple press clearly shows one of the superior Siempelkamp features: Frame Construction. The frame, built of thick rolled high tensile steel sheets, eliminates the possibility of broken tie rods and loosened nuts. Finished presses, of course, have fully guided platens.

Siempelkamp

Announces the appointment of

WILLIAM TAPPER

30 South Broadway, Yonkers, N. Y.

as its exclusive representative to the Rubber and Plastic industries.

Siempelkamp has been building hydraulic presses since 1883 and this experience, plus traditional Old World craftsmanship, assures highly satisfactory, trouble-free performance. Send your specifications or requirements, and drawings will be furnished without obligation.

Siempelkamp presses are priced so as to offer substantial savings to users. This important feature alone deserves your most serious consideration. As for terms, Siemplekamp offers an unusual opportunity: A direct and attractive credit arrangement to all well rated companies.

All U. S. A. inquiries should be sent to:

WILLIAM TAPPER

30 South Broadway, YONKERS, N. Y.

Phone: Yonkers 3-7455 Cable: Wiltapper, NY

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SIEMPELKAMP & CO.

KREFELD, WEST GERMANY

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PICK ONE... for better Non-Black compounding!

If you have a problem in compounding non-black natural or synthetic rubber stocks, try Hi-Sil.

Hi-Sil has proved itself outstanding to many compounders through improved performance, superior results, and lowered volume cost.

There are three members in Columbia-Southern's Hi-Sil group: Hi-Sil 101, Hi-Sil 202, Hi-Sil X303. Hi-Sil X303 is an experimental high purity material specifically developed for silicone rubber compounding. The physical properties of each vary slightly to emphasize different characteristics. There is one ideally suited for you and your problems. Write today for complete data and working samples of Hi-Sil, Technical Service Department, at the Pittsburgh address.

HI-SIL, an exclusive Columbia-Southern reinforcing pigment, is a precipitated silica of extremely fine particle size.

COLUMBIA-SOUTHERN
CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
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DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland
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For Rubber Compounding Use VELSICOL RESINS

NOW AVAILABLE IN VARYING MELTING-POINT RANGES AND COLORED GRADES

SOME SUGGESTED APPLICATIONS:

- Mechanical Goods
- Electrical Insulation Compounds
- Rubber Shoe Soles and Heels
- Rubber Floor Tiling
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- Rubber Adhesives and Cements
- Molded Rubber Products
- Tubular Compounds
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- Battery Cases
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FEATURES:

1. THERMOPLASTIC HYDROCARBON RESINS.
2. COMPATIBLE WITH NATURAL AND SYNTHETIC RUBBERS.
3. EFFECTIVE PLASTICIZERS AND SOFTENERS . . . in highly-loaded clay stocks or in recipes incorporating carbon black.
4. MILL READILY.
5. EXCELLENT DISPERSING AGENTS FOR FILLERS AND PIGMENTS.
6. FACILITATE PROCESSING PROCEDURES . . . impart excellent milling, calendering processing and tubing characteristics to stocks.
7. IMPART EXCELLENT PERFORMANCE CHARACTERISTICS . . . such as good tensile strength, elongation and modulus, as well as good resistance to abrasion and aging.
8. POSSESS HIGH ELECTRICAL RESISTANCE PROPERTIES.
9. AID IN THE DEVELOPMENT OF NON-SCORCHY STOCKS . . . without excessive retardation of cure at high temperatures.

For additional information concerning properties and applications of Velsicol Resins, WRITE:

VELSICOL CORPORATION

General Offices and Laboratories
330 East Grand Avenue, Chicago 11, Illinois

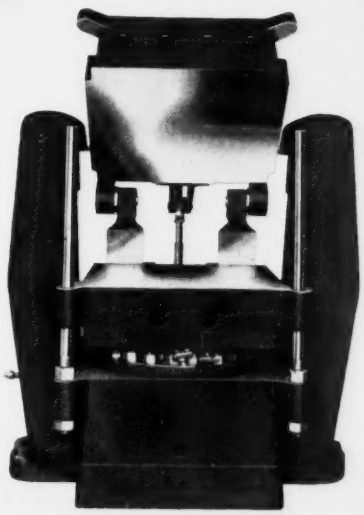
Export Division
100 East 42nd Street, New York 17, New York

REPRESENTATIVES IN PRINCIPAL CITIES

PETROLEUM DERIVED CHEMICALS — VELSICOL — SERVING BASIC INDUSTRIES

TILTING HEAD PRESS

eliminates mold handling



- Molds fasten to platen.
- Jaws open—operator removes work.
- Molds are filled and press closes.
- No heavy lifting or straining.
- No chance for off-center or slippage.
- Equal, uniform pressure.
- Operates off standard hydraulic drive or individual pumps.
- Can be equipped for Transfer Molding.
- All standard platen sizes with tonnage capacities up to 1,000 tons.

National Erie products for the Plastic and Rubber Industries • Extruders • Simplex Doors for Autoclaves • Mills and Hydraulic Presses.

This old and well-known line of machinery was acquired March 1, 1952, by The Aetna-Standard Engineering Company. They are manufactured in their Warren, Ohio, and Ellwood City, Pa., plants. The sales and engineering of the National Erie line is the responsibility of Hale and Kullgren, Inc., Akron, O.

SALES and ENGINEERING by

HALE AND KULLGREN INCORPORATED

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MANUFACTURING by

Aetna-Standard

THE AETNA-STANDARD ENGINEERING CO.
PITTSBURGH, PA.

Plants in Warren, Ohio
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for Superior

COVE BASE

use Pequanoc

11940 RECLAIM

A long lasting, abrasion resistant Cove Base formula using Pequanoc 11940 Reclaim.

COVE BASE (A 337-6)

PEQUANOC 11940 Reclaim	55.00
Mineral Rubber	2.85
Zinc Oxide	.85
Hard Clay	38.00
Petrolatum	.25
Dutrex #6	1.90
Benzothiazyl Disulfide	.33
D O T G	.08
Sulfur	.74
	100.00

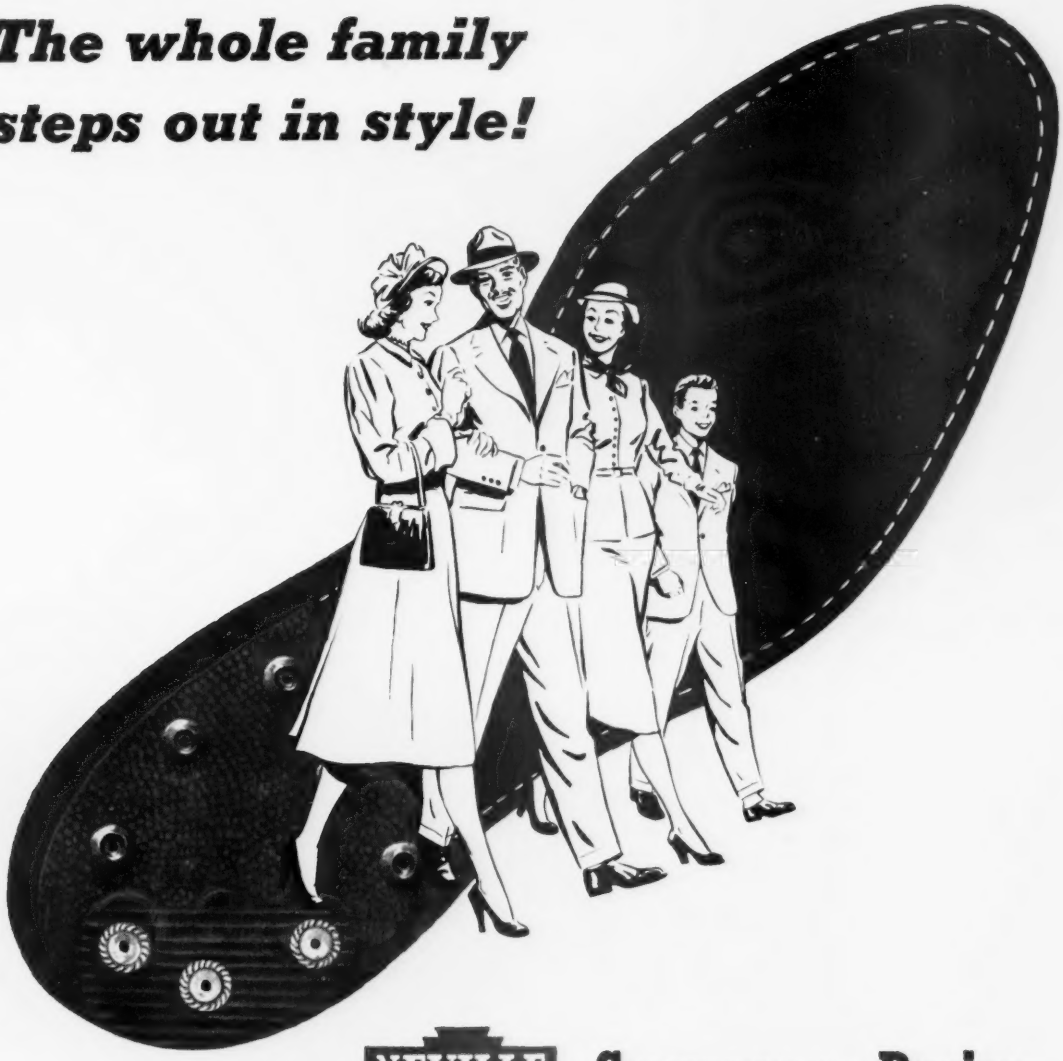
Est. Lb. Cost	.0714
Specific Gravity	1.60
Volume Cost	.1142
"A" Durometer	92-95
Tensile	600-700 p.s.i.

Pequanoc Rubber Co.

MANUFACTURERS OF RECLAIMED RUBBER

MAIN SALES OFFICE and FACTORY: BUTLER, N. J.

The whole family steps out in style!



. . . thanks to NEVILLE Coumarone Resins

Why not call on Neville's years of experience and "know-how" to help you in your particular problems.

PRODUCTS OF TOMORROW FROM THE CHEMICALS OF TODAY

The buyer of shoes looks for style, lightness, flexibility, comfort, waterproof protection and long wear!

The manufacturer, on the other hand, in order to guarantee these necessary selling points, seeks tensile strength, abrasion resistance, flex-life and uniform quality in the stock he uses for producing quality foot-wear!

That's why Neville Coumarone Resins are being used in sole and heel compounding in ever-increasing volume. Through them manufacturers enjoy improved properties and production advantages, building tack in their compounds without sacrificing hardness, tensile or tear.

NEVILLE CHEMICAL CO. • PITTSBURGH 25, PA.

Plants at Neville Island, Pa., and Anaheim, Cal.

all dolled up with Titanox®

Cuddly dolls, the kind every little girl wants, are most warm and appealing when the rubber or plastic has the realistic coloration provided by TITANOX white pigments. Proper pigmentation adds tremendously to the sales appeal of any rubber product, from dolls to white wall tires.

TITANOX titanium dioxide pigments are compatible with all types of rubber and plastics. These strongest of white pigments add quality by imparting whiteness and maximum brightness and opacity to white or tinted products while maintaining natural strength and life.

Consult with our Technical Service Department for the solution to any rubber or plastic pigmentation problem you may have. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

®TITANOX

the brightest name in pigments

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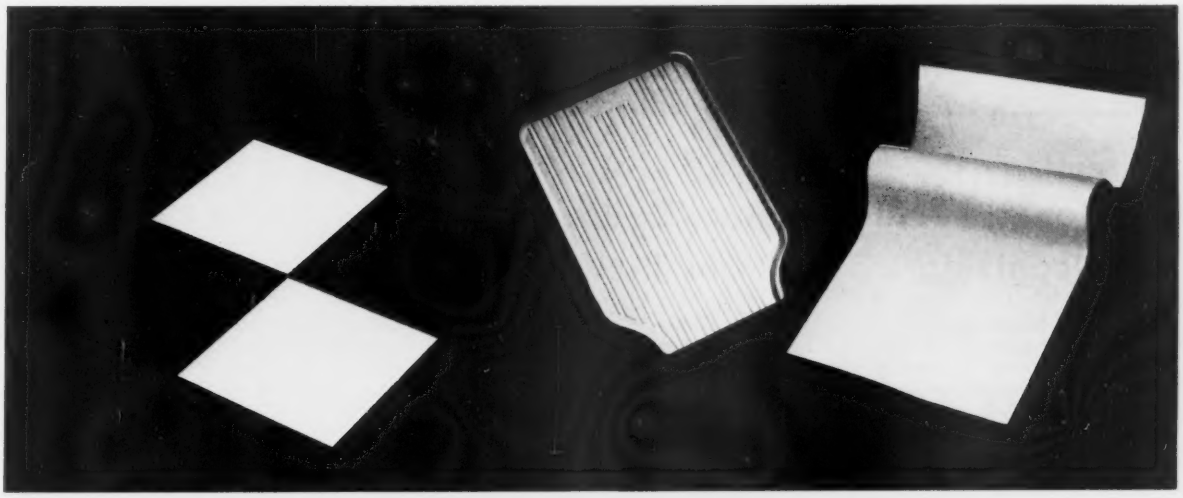
TITANIUM PIGMENT CORPORATION

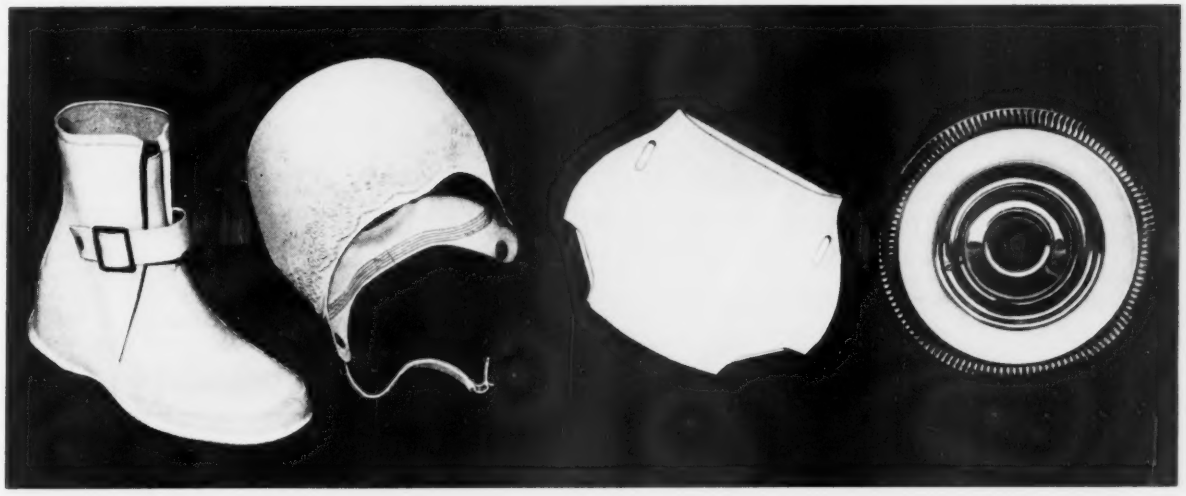
Subsidiary of NATIONAL LEAD COMPANY



For Economical, Long-Lasting Whiteness

UNITANE® 0-220

TITANIUM DIOXIDE



Specify UNITANE 0-220 for maximum whiteness with minimum loading in white and tinted stocks. This anatase pigment provides high-quality whiteness and brightness at lowest cost.

Your Cyanamid Pigments representative will gladly give you full information on the wide range of UNITANE pigments available for every purpose.

CHEMICAL PROGRESS WEEK-MAY 1922

AMERICAN *Cyanamid* COMPANY
PIGMENTS DIVISION
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.
BRANCH OFFICES AND WAREHOUSES IN PRINCIPAL CITIES

CHEMICAL PROGRESS .. at GENERAL MILLS

General Mills Aliphats Reduce Odor ☆☆☆☆☆ Accelerate Vulcanizing ☆☆☆☆☆ Aid Mold Lubrication, Foam Stability

Objectionable Odors in latex foam rubber products can be more than a source of annoyance. Even the faintest traces of these objectionable odors can lead directly to loss of sales.

That's why General Mills feels it would pay you to investigate its Aliphat (fatty acid) 44-B for use in latex foam rubber products. For General Mills has succeeded in almost completely eliminating objectionable odors from this fatty acid.

Also, Aliphat 44-B offers superior foam-rubber performance by making a more stable foam. This foam stability is a result of the rosin acids, which are present in just about their most favorable concentration for this purpose. The rosin acids amount to approximately 15 per cent of Aliphat 44-B, with oleic and linoleic acids each accounting for about 40.5 per cent.

And there are other important characteristics to consider. For example, Aliphat 44-B is considerably cheaper than oleic acid. It saponifies readily, and speeds up vulcanizing action when the rubber is cured.

If you would like additional information on General Mills Aliphats (fatty acids), please mail the coupon below.

Special Controls of Fully-Automatic General Mills Chemical Plant, Kankakee, Illinois, Assure Uniform Composition and Performance of fatty acids.

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Uniform Performance of fatty acids in rubber compounding and processing is assured when you use General Mills Aliphats. The high quality and uniformity of these fatty acids is maintained through careful selection of materials, closely controlled distillation, and constant progress thru research.

In the manufacture of dense rubber products, for instance, General Mills Aliphats 6-R and 7-R are often used. Each has been developed especially for rubber making.

Aliphat 6-R is a rubber grade stearic acid. It is especially effective as an activating agent . . . to produce the best results in rubber compounding. In processing rubber stock, Aliphat 6-R also does two important jobs for you. It helps disperse the pigment properly, and serves as a mold lubricant.

General Mills Aliphat 7-R, on the other hand, is an undistilled tallow fatty acid. It is partially hydrogenated for better rubber making performance and uniformity. You can save money in raw material, too, by using Aliphat 7-R in rubber formulations where color requirements are not critical.

Rubber specialty manufacturers find Aliphat 7-R useful as an activating agent, an aid in pigment dispersion, and as a mold lubricant. Other uses include synthetic rubber compounding and rubber reclaiming.

For technical information on either Aliphat 6-R or 7-R, just mail the coupon below.

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In Addition to the Aliphats mentioned, General Mills has a large variety of specialized fatty acids for rubber manufacturers.

For sponge rubber, Aliphats 44-B, 6-C, and 33-B are especially recommended; for foam rubber, Aliphats 44-A and 44-B; and for dense rubber, Aliphats 6-R and 7-R. These and other fatty acids may be used successfully, either individually or in special tailor-made mixtures.

The recent experience of many rubber manufacturers has shown them that mixtures of General Mills Aliphats often give results superior to any other material available. Why? Because, today's fatty acid technology . . . as practiced at General Mills . . . makes it possible for you to use mixtures designed especially for your specific rubber-making needs.

If you do not have technical information on the fatty acids available from General Mills, please mail the coupon below.

There is an ALIPHAT *for your specific need.*

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CHEMICAL DIVISION

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Natural Rubber **Nitrile Rubber** **GR-S**	For HEAT RESISTANCE—SUPER AGING—TARNISH RESISTANCE Use 3.0-4.0 PHR of **SA 52** as the VULCANIZING AGENT. For FAST, TIGHT CURE Use 0.4-1.5 PHR of **SA 52** as PRIMARY ACCELERATOR with 1.0-2.5 PHR of sulfur. To ACTIVATE THIAZOLES Use 0.05-0.30 PHR of **SA 52** as a SECONDARY ACCELERATOR.
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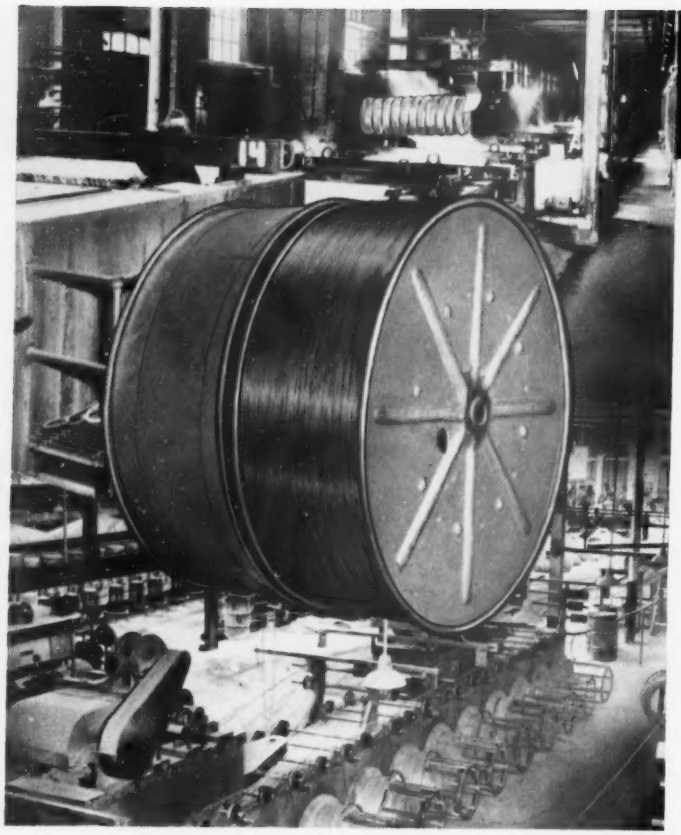

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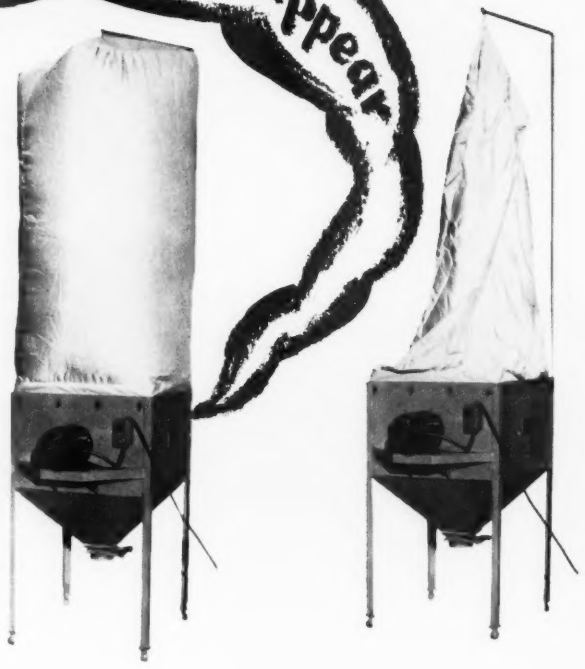

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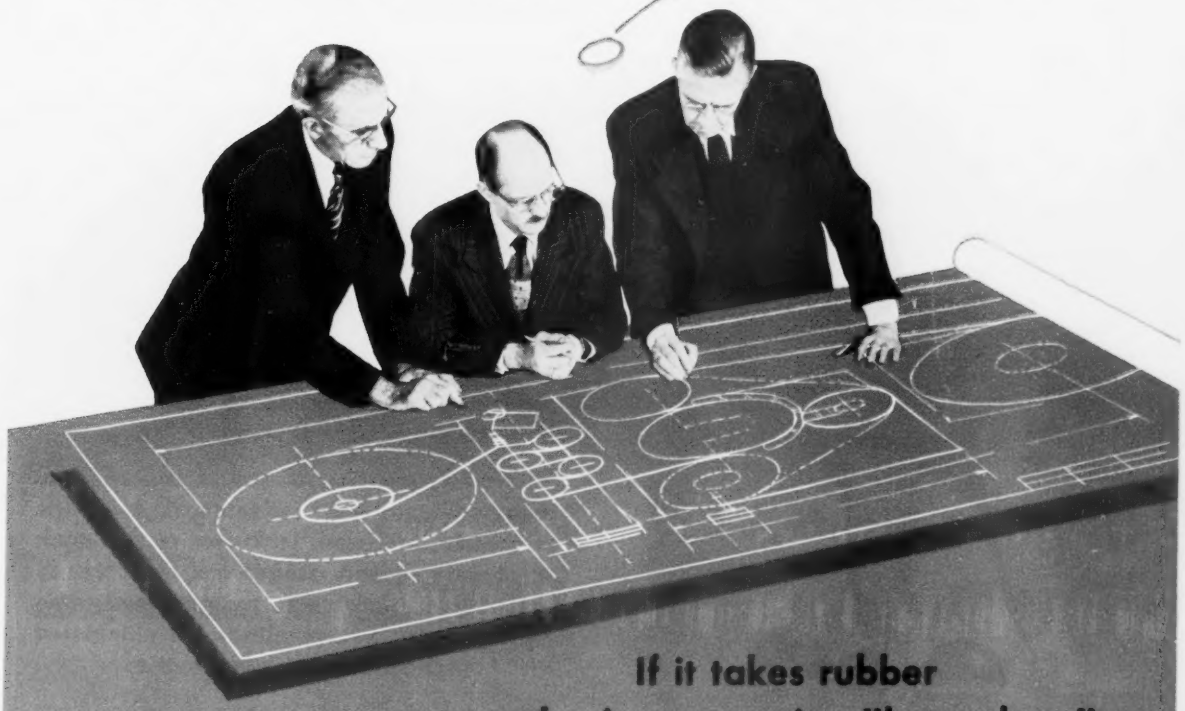

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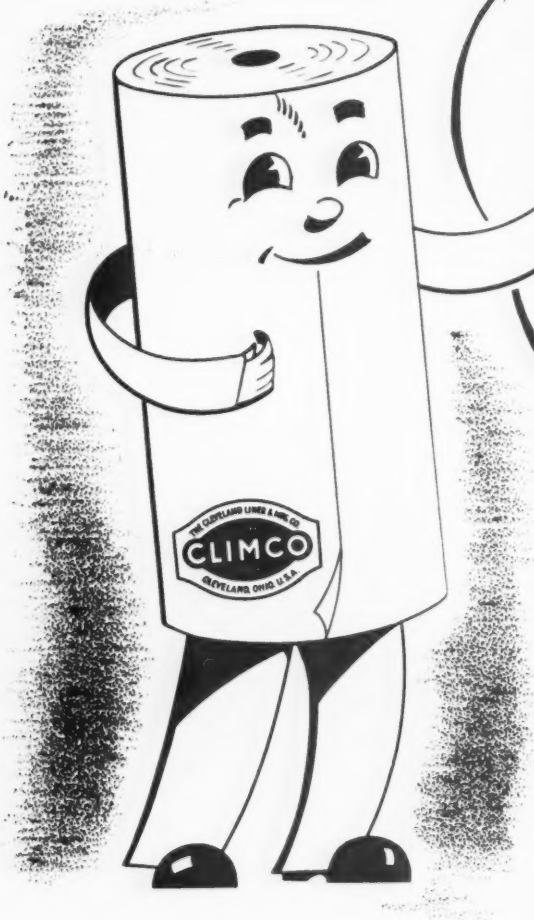

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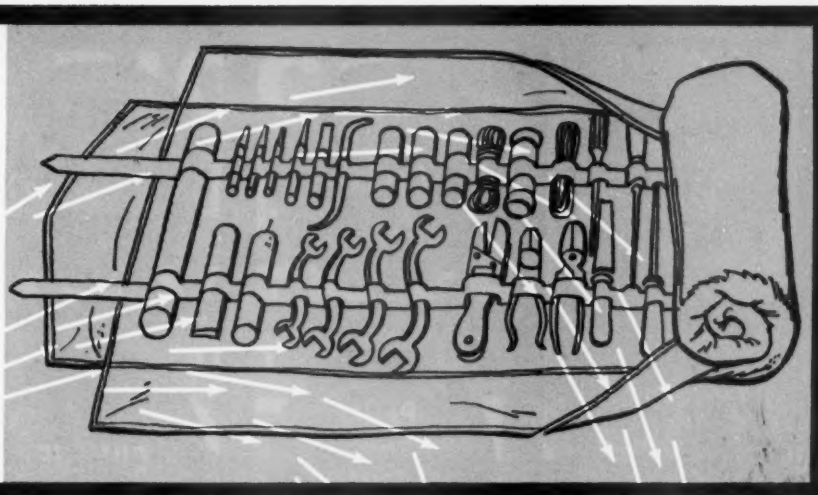
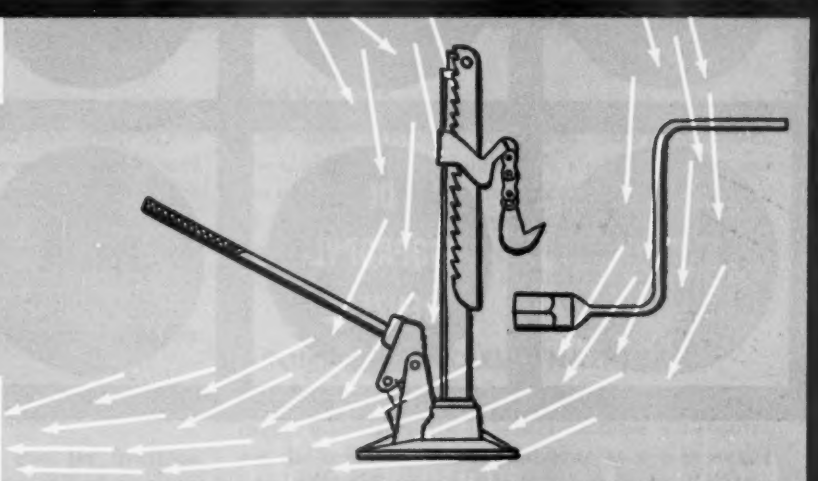


to here?



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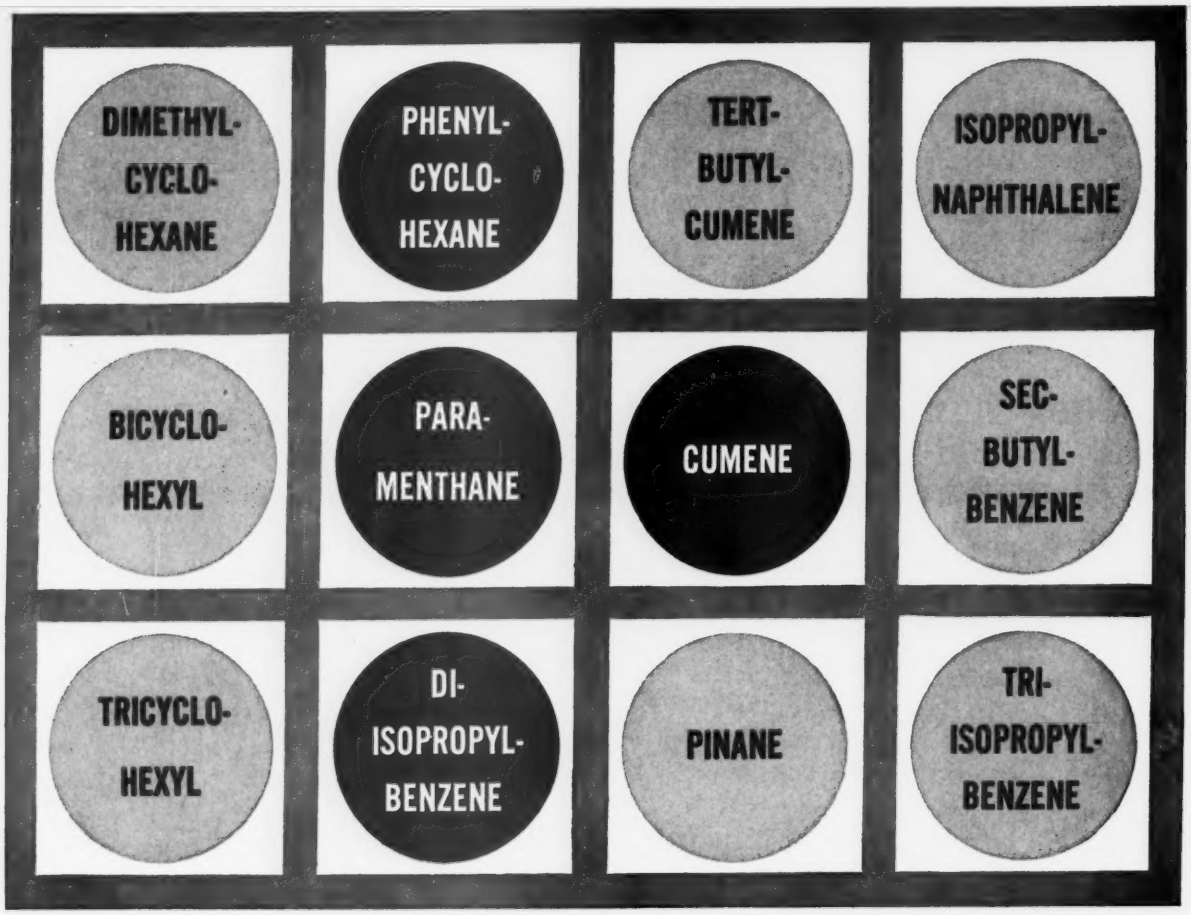

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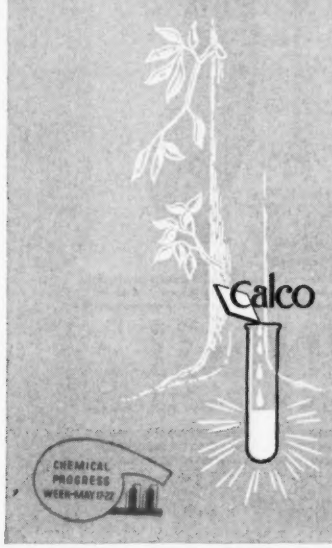

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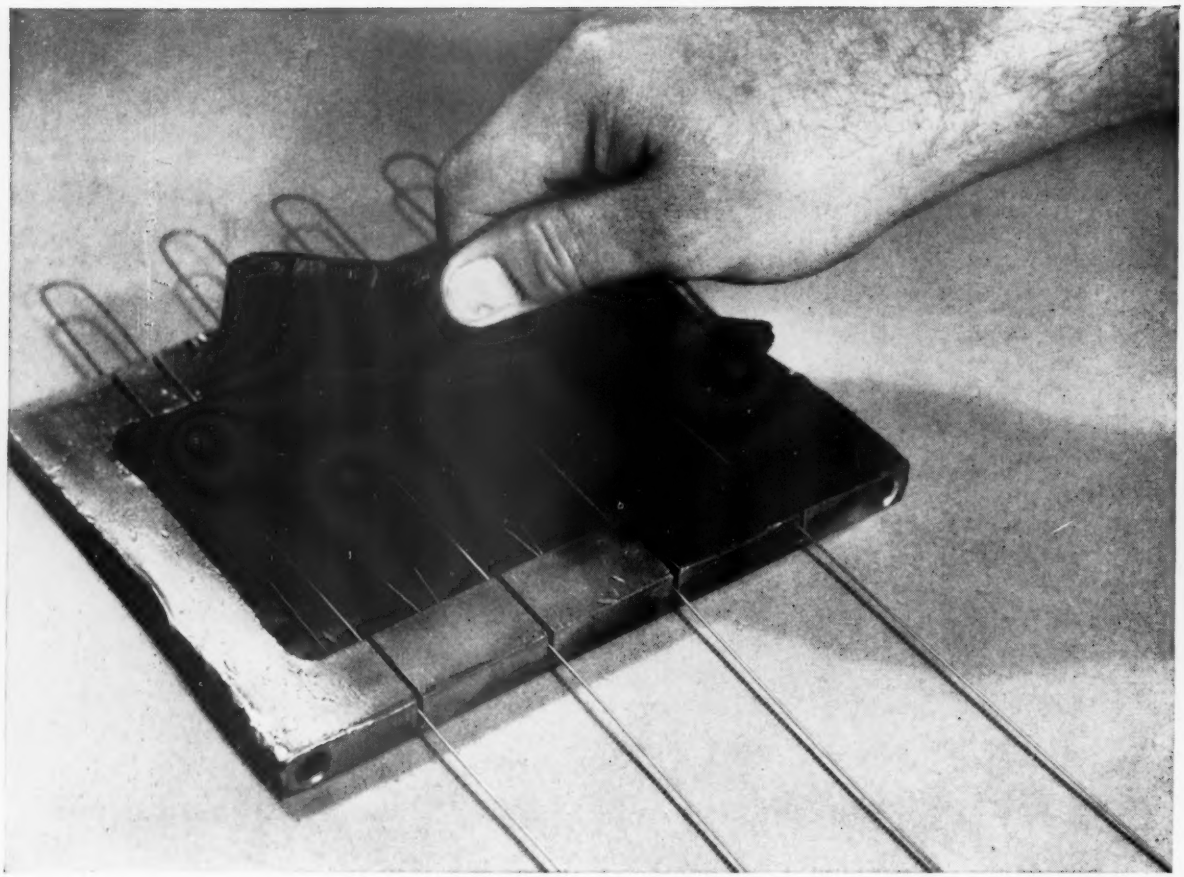

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• It doesn't pay to take things for granted. That's why extensive wire research goes on *all* the time at National-Standard — behind-the-scenes work that time and again helps our customers speed operations, save material, improve their products and cut costs.

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SKELLYSOLVE-R. For general use in tire building and a variety of other manufacturing operations and cements. Reduces evaporation losses. Medium quick-final dry. Lessens bloating and skinning tendency.

"Doc" MacGEE says: When it comes to selecting the source of your solvents, remember that while bigness of a solvent supplier is no guarantee of your satisfaction – bigness plus experience do make a difference! And that's exactly what you get with Skellysolve.

First of all, Skellysolve is a major operation of an integrated oil company – not a sideline. For more than 24 years, Skelly Oil Company has pioneered and perfected solvents for industry. No Skellysolve is ever allowed to leave the refinery before it checks on every specification. Equally important, Skelly has what it takes to "deliver the goods"– even when the weather goes berserk. When a Skellysolve tank car couldn't get there – a Skellysolve truck *did*.

Quality control facilities of Skellysolve are outstanding. That's why you get uniformity that protects your product's quality – and assures smooth day-after-day production in your plant. Skellysolve is unsurpassed for low end points, quick evaporation, reduced blushing tendency, low vapor pressure, a minimum of unsaturates and pyrogenic decomposition products and a minimum of low and high boiling compounds. On *every* score that affects your product's quality and sales appeal – you'll be safer with Skellysolve!

Get all the facts about Skellysolve now! Or if you have a special solvent application problem, you're invited to call in the Skellysolve Technical Fieldman. Write today!

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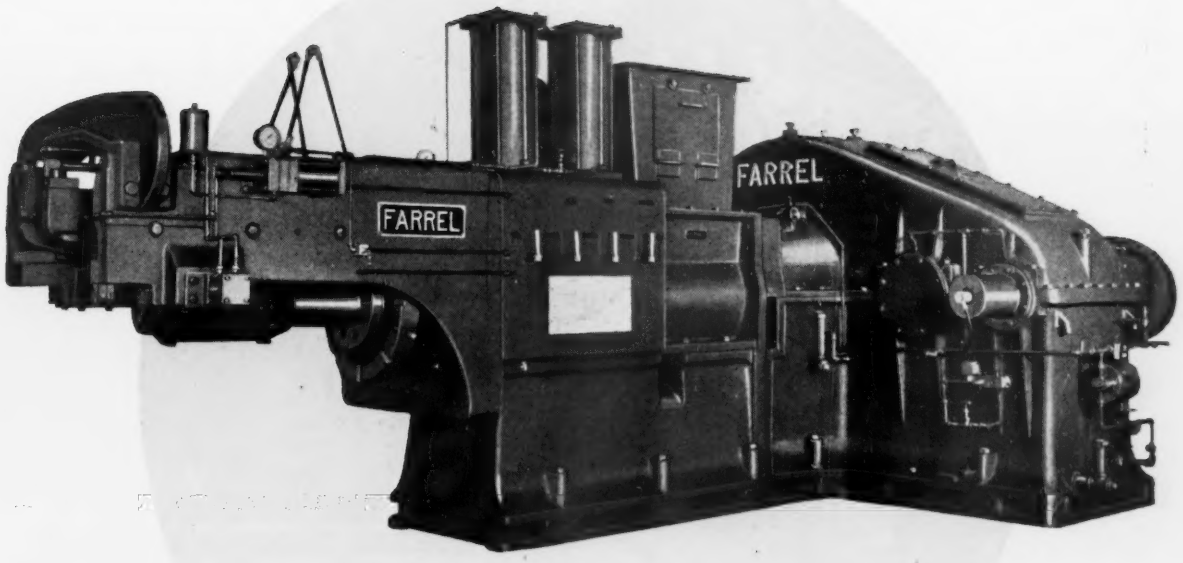

This NEW Giant Extruder can take the output of two size 11 Banbury* Mixers

This new extruder can be used with one size 11 Banbury mixer on short-cycle operation of 1½ to 2½ minutes, or with two size 11's for longer cycles. The extruder is installed under the Banbury, and in the case of two mixers, a belt conveyor carries the discharge from the second mixer to the extruder hopper, alternating with the gravity feed from the first mixer. With this arrangement, production can be maintained at a rate of 10,000 to 18,000 pounds per hour. Operation is entirely automatic.

An electric eye in the feed hopper actuates an air-operated clutch in the drive to stop the machine when the hopper becomes empty between batches. This keeps the screw always full of stock, so that the slab discharged is uniform and unbroken.

Extruders of this size provide the answer to full utilization of short-cycle operation of large-capacity Banbury mixers. The bottleneck of a group of milling operations following Banbury processing is eliminated, together with all manual handling connected with milling. Flow of material is accelerated and simplified; also the plasticity of stock worked by the screw in a single pass in the extruder chamber is more uniform than that of milled stock.

Where the desired rate of production warrants an installation of this size, Farrel-Birmingham's long experience in the design and manufacture of extruding machines takes the risk out of the investment. Write for complete details.

These machines extrude through a circular die. The stock is slit at the die exit to form a continuous slab, approximately 50 inches in width, which can be cut to desired lengths.

A retractable cone, operated by an air-hydraulic system, facilitates rapid automatic cleanout (see above photo). A hydraulically operated locking device keeps the cone in positive operating position. Gauging blocks of different thicknesses, which are mounted on the carriage, are used to adjust the die opening.

FARREL-BIRMINGHAM COMPANY, INC.
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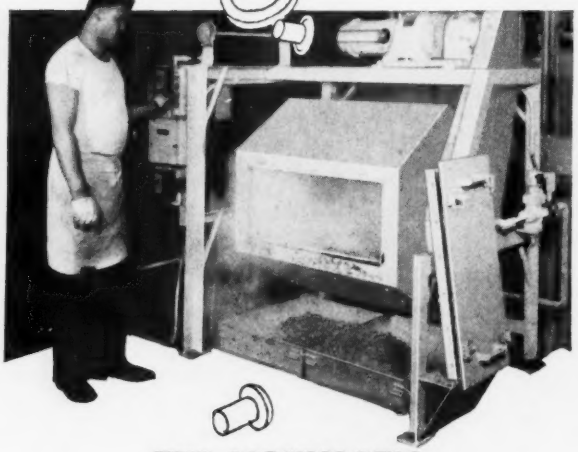

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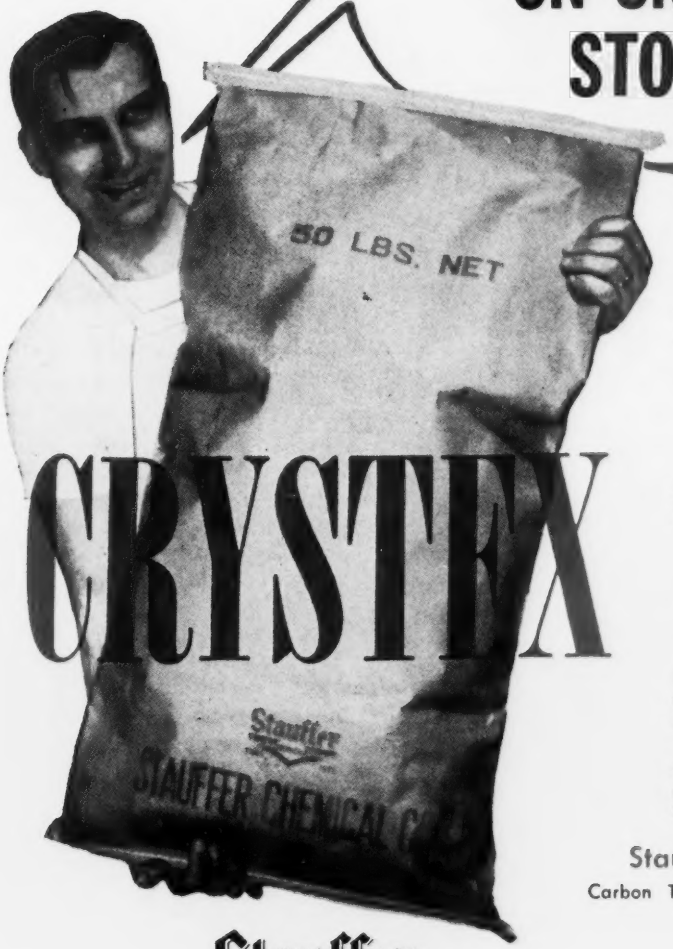

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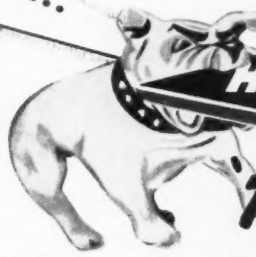

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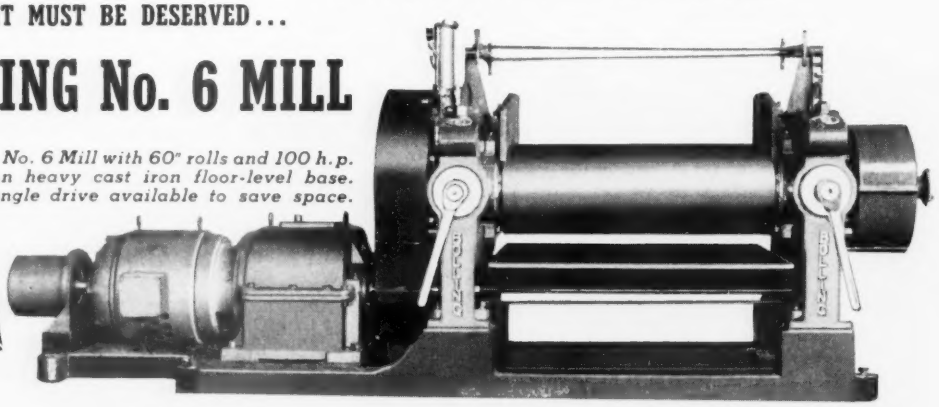

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RUBBER AGE

Vol. 75, No. 1 APRIL, 1954

Stabilizing Oil-Polymer Masterbatches

By W. K. TAFT, J. DUKE, A. D. SNYDER and R. W. LAUNDRIE

Government Laboratories, University of Akron, Akron, Ohio

Previous results *(1)* have shown that the high Mooney viscosity GR-S polymer in masterbatches prepared from most of the oils, especially the highly aromatic oils, decreased in molecular weight and Mooney viscosity during storage. Base polymers were also found to break down on heating depending more or less on their exposure to air. In the present investigation, the effect of air blowing the latex on the heat and storage stability of subsequently prepared masterbatches containing either of two highly aromatic oils is reported. The results show clearly that air blowing of the latex either delays the time when breakdown commences during storage or reduces the amount of breakdown in a given period of time. This is confirmed by the results of heat aging tests conducted at 140° F. The effect of blowing the latex with air had relatively little effect on the decrease in Mooney viscosity of the masterbatches during aging at 200° and 300° F., thus suggesting the probability that the processing properties will be unaffected by air blowing the latex.

THE changes in dilute solution and Mooney viscosities of oil masterbatches with time of storage have been shown *(1)* to vary with each masterbatch prepared from the same latex, and with the aromaticity of the oil, the highly aromatic oils causing more breakdown than the paraffinic. It has been pointed out that with oil-free polymers the induction period prior to chain scission decreases with an increase in the initial Mooney viscosity of the polymer. It is understandable that there should be more change in polymers of high rather than low Mooney viscosity when consideration is given to the greater susceptibility of polymer near the gel point to oxidative change, resulting in breakdown or cross-linking. Why some polymers should break down rather than cross-link is not wholly apparent. From the opposite results obtained in heat aging in the presence of air or nitrogen with Dutrex 20 or Califlux GP masterbatches made with and without cumene hydroperoxide, it is evident that inhibitors and oxygen transfer agents, either in the polymer or oil, are present to affect both breakdown and condensation or the various gellation reactions.

Watson *(2)*, working with natural rubber in solution under vacuum, suggests that rubber possesses an anomalous bond, and further that degradation after cold mastication is difficult to explain except by the existence of weak bonds. Some synthetic polymers of butadiene-styrene are known to behave similarly in solution in the absence of oxygen. It is reasonable that such weak bonds in synthetic polymers would be attacked by oxygen, possibly not to the point of scission but only to form oxygen additives. These might then behave in a similar manner to peroxides, whereas other active constituents in oils might act either to form peroxides, or, in the presence of polymer, act as transfer agents for active or "nascent" oxygen to attack the polymer chain, either at the weak bonds referred to above or at other vulnerable points in the polymer chain.

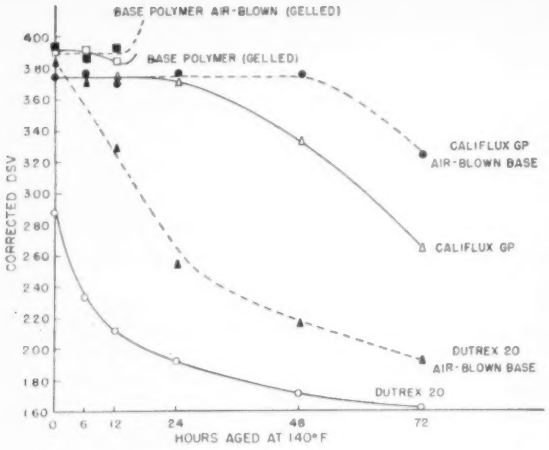

FIG. 1—Change in DSV breakdown with time of heating at 140°F. (Masterbatches contain 45 parts of oil per 100 of polymer).

Procedure

A synthetic GR-S latex made at 41°F. to 60% conversion and having a contained polymer of 160 ML-4 viscosity was divided into two parts. One was protected from air by storage in a closed wooden tank and the other was blown for 72 hours with an amount of air sufficient to provide good agitation as observed at the surface of the latex. The stabilizer, phenyl-beta-naphthylamine, was present in the original latex in an amount equal to 1.5% of the solid material. Oil-free samples of the polymer from both latices were coagulated and washed. Oil masterbatches were made from each latex to contain 45 parts p.h.r. of each of two oils, Califlux GP and Dutrex 20. All samples were carefully dried at 140°F. in a forced draft oven to a maximum of 0.48% volatile matter.

Portions of the dried samples were extruded through a "spaghetti" die and then heat-aged in a forced draft oven for various periods of time at temperatures of 140°, 200° and 300°F. All samples were tested for gel content, dilute solution viscosity (DSV), and Mooney viscosity. Before and after aging, the samples were extracted in acetone for 15 hours and the extraction values were used to correct the DSV results to a polymer basis. The remaining dried crumb of each polymer and masterbatch was stored in an air conditioned room at 75°F. with a relative humidity of 35 ± 5%. These stored samples were tested at intervals for gel content, DSV, and Mooney viscosity.

The analyses of Califlux GP and Dutrex 20 by the Rostler method are shown in Table I.

Results and Discussion

Figures 1 and 2 show the changes that occurred in DSV during heat aging of the samples prepared from the fresh latex and from the aerated latex.

At 140°F., both samples of the oil-free base polymer gelled rather early in the heating period, but none of the oil masterbatches gelled at this temperature. With the Califlux GP and Dutrex 20 masterbatches, much slower polymer breakdown occurred with the samples prepared from the air-blown latex than with the corresponding samples made from the latex that was not aerated. In the case of the Dutrex 20 masterbatches, the use of the air-blown latex eliminated the considerable drop in DSV

TABLE I—ANALYSES OF CALIFLUX GP AND DUTREX 20

	Chemically Characterized Groups,* %			
	Asphaltenes	Nitrogen Bases	Unsaturated Hydrocarbons Group 1	Saturated Hydrocarbons Group 2
Califlux GP	Nil	16.1	18.4	54.2
Dutrex 20	Nil	22.3	18.4	53.4

* Rostler, F. S., and Sternberg, H. W., *Ind. Eng. Chem.*, Vol. 41, p. 598 (1949).

that occurred prior to the testing of the sample. This is seen in Figure 1 by comparing the DSV values at zero hour of aging for the two Dutrex 20 masterbatches. With the Califlux GP masterbatches, however, the effects of air blowing the latex did not become apparent until after 24 hours of aging, i.e., the breakdown curves for the two masterbatches are similar up to that point. The untreated sample started to break down after 24 hours of heating, whereas the sample prepared from the air-treated latex did not start to break down for an additional 24 hours, indicating that air blowing had increased the stability of the polymer or had increased the induction period of the mechanism, presumably oxidative.

At 200°F., no gellation occurred with any of the samples, and throughout the testing period breakdown occurred at a lower rate for the base polymer from the air-blown latex. Differences between the masterbatches prepared from air-treated and untreated latex were not as great at this temperature (Figure 2) as at 140°F.; however, with either oil, somewhat slower polymer

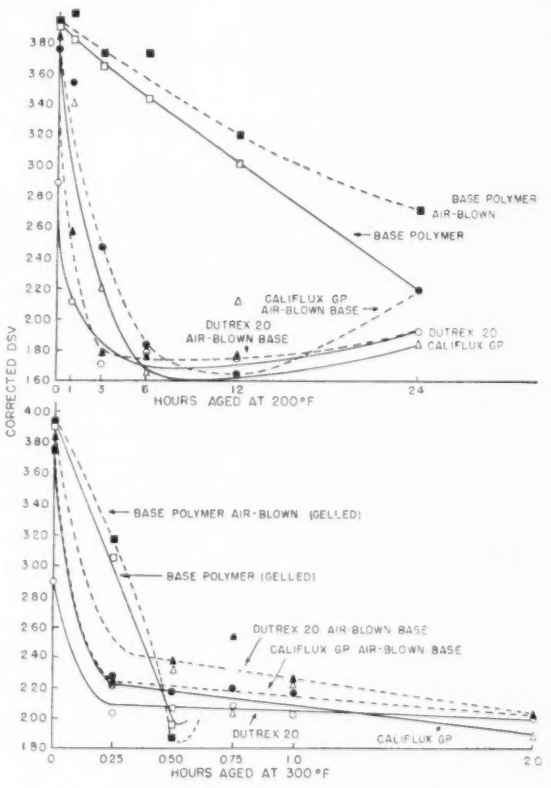

FIG. 2—Change in DSV breakdown with time of heating at 200° and 300°F. (Masterbatches contain 45 parts of oil per 100 of polymer).

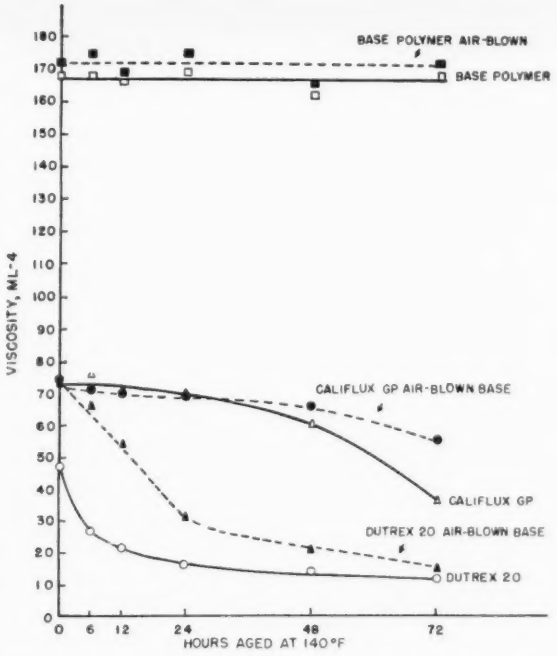

FIG. 3—Change in Mooney viscosity with time of heating at 140°F. (Masterbatches contain 45 parts of oil per 100 of polymer).

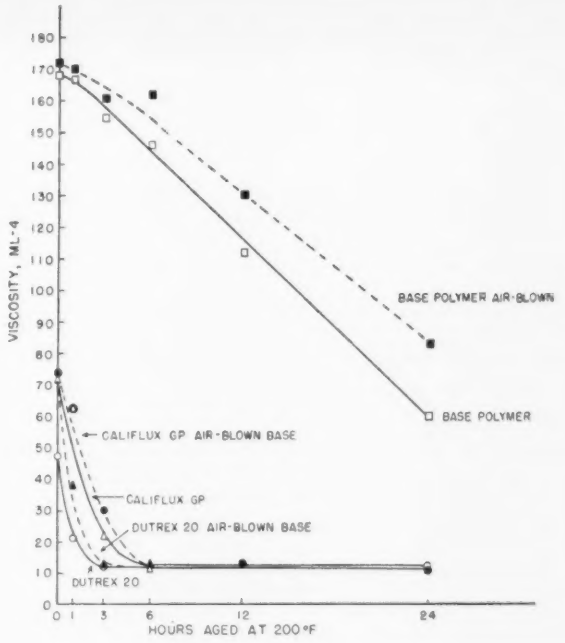

FIG. 4—Change in Mooney viscosity with time of heating at 200°F. (Masterbatches contain 45 parts of oil per 100 of polymer).

breakdown occurred for the samples made from aerated latex. With the Califlux GP masterbatches, more polymer condensation occurred in the sample prepared from air-blown latex.

At 300°F., only slight differences were noted between the two samples of base polymer—both gelled after one-half hour. The Dutrex 20 masterbatch made from the treated latex broke down at a lower rate than did the untreated sample, although approximately the same DSV value was reached in each case at the end of two hours. No significant differences were noted between the two samples of the Califlux GP masterbatches.

Figures 3, 4, and 5 show the changes that occurred in Mooney viscosity during heat aging of the same samples at the three test temperatures.

Even though the base polymers gelled with continued heating at 140°F., no change in Mooney viscosity was observed upon heating either sample at 140°F. The same general trends, including the induction period with the masterbatch made with Califlux GP and air-blown latex, were observed in the change in Mooney viscosity as observed with dilute solution viscosity.

The change in Mooney viscosity with time of heating at 200°F. was generally similar to that observed for the change in DSV. For periods up to one hour, the relative change in Mooney viscosity of the masterbatches made from the same oil is relatively small, indicating the probability that processing at this temperature should not be adversely affected by air blowing. Further work to check this is indicated.

At 300°F., the base polymers gelled on continued heating, but did not increase in Mooney viscosity. Otherwise, the same general conclusions can be drawn from these Mooney viscosity curves as from those made at 200°F., except for the degree of breakdown.

The results of Mooney and dilute solution viscosity changes with time of storage in an air conditioned room at 75°F. and 35% relative humidity are shown in Figure 6. The relatively insignificant changes in the two masterbatches made with Califlux GP from the regular and air-blown samples of latex are apparent. These results are generally in line with the interpretation drawn from heat aging at 140°F., where the sample prepared from the fresh latex changed more than that from the

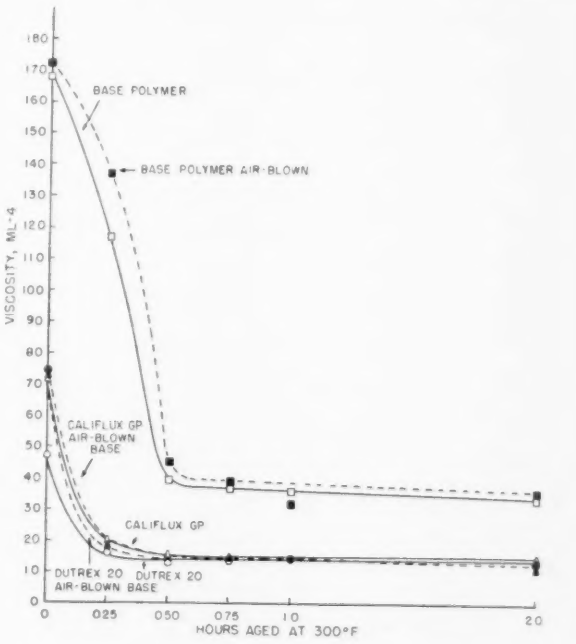

FIG. 5—Change in Mooney viscosity with time of heating at 300°F. (Masterbatches contain 45 parts of oil per 100 of polymer).

aerated latex. The marked difference in the storage stability of the two samples made with Dutrex 20 is also shown, and is in general agreement with the results presented in Figures 1 and 4 for these same samples. The differences in the storage stability of the masterbatches made with the two different oils are likewise very marked.

The points in the square shown in Figure 6 are the values obtained for the original samples of the Dutrex 20 masterbatches used for heat aging studies. It will be noted that they fit into the general picture of breakdown versus time. Similar data for the Califlux GP samples are not shown, for they fall on the curves as drawn, within experimental error, and indicate that the breakdown is mostly due to changes in storage, not drying.

It is of interest to note that the oils used in this study and in previous work *(1)* were from the same shipments. In the previous work, the heat aging results as well as the storage stability of masterbatches made with the Califlux GP and Dutrex 20 were much more alike for the two oils than they were found to be in this work. The polymer in the latex used in this study was higher in molecular weight and closer to the gel point than was the polymer used previously. All polymers were gel-free when dried. This difference in results may appear disconcerting, but in reality it is what is to be expected if the relative states of oxidation of both the contained polymer and the active constituent in the oil used are affected, even though inhibitors (possibly peroxide) or active breakdown agents (active hydrogen as previously defined) *(3)* are present. This would also explain why there is inhibition.

SPECIAL NOTE

The work discussed herein was performed as a part of the research project sponsored by the Reconstruction Finance Corporation, Office of Synthetic Rubber, in connection with the Government Synthetic Rubber Program.

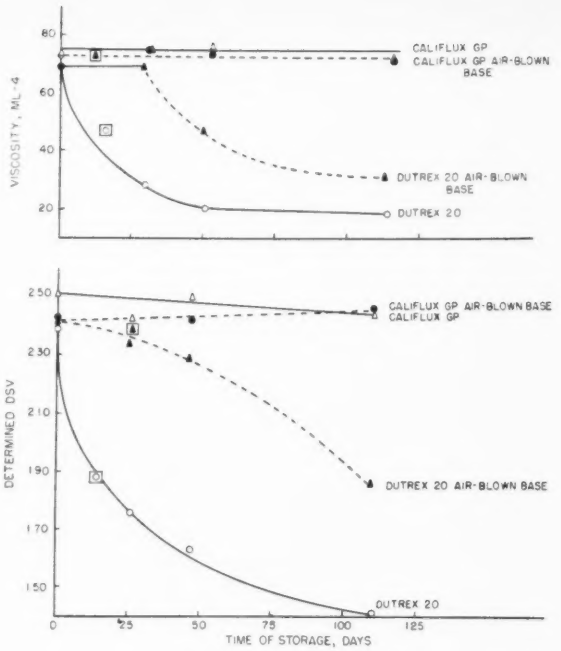

FIG. 6—Storage stability of masterbatches (stored at 75°F. with relative humidity of 35 ± 5%).

LITERATURE REFERENCES

(1) Taft, W. K., Duke, J., Laundrie, R. W., Snyder, A. D., Prem, D. C., and Mooney, H., *Ind. Eng. Chem.*, Vol. 46, pp. 396-412 (1954).
(2) Watson, W. F., *Trans. Inst. Rubber Ind.*, Vol. 29, pp. 202-14 (1953).
(3) Taft, W. K., Snyder, A. D., and Duke, J., "Role of Active Hydrogen in Breakdown of Oil-Masterbatched Polymers," to be published.

Rainy Day Commuter Outfit

A new rainy day commuter outfit, that protects men from top to toe, is now being made by the U. S. Rubber Co., New York, N. Y. The new outfit consists of a raincoat with cape back, a hat protector, and leggings. The leggings are designed to protect men's trousers from getting wet below the coat. They slip on easily and are held up at the top by a loop over the belt. Raincoat, hat protector, and leggings are all made of strong, low temperature, embossed plastic film, with heat sealed seams. All are in an attractive brown color. The complete outfit is packaged in a compact drawstring bag of the same material. Leggings or coat with hat protector, if purchased separately, come in an individual pouch of the same material. The raincoat has ventilating holes under the cape for coolness. Button holes have extra reinforcement to add to the wear life of the coat. In the pocket of each coat is a gold transfer outfit so the owner can write his name on the garment to personalize it. The "Commuter Outfit" will be particularly practical for salesmen and other business or professional men who go from place to place on rainy days. The coat is made in small, medium, large and extra large sizes, in regular and long lengths.

Mechanical Properties of High Mooney Elastomers

By P. J. EARLEY and M. J. SANGER

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THE utilization of oil-enriched high Mooney elastomers has shown a steady growth since the principles of this technique were first disclosed by Swart, Pfau, and Weinstock in June, 1951 *(1)*. Other investigators have presented the economic and quality advantages of this new approach to synthetic rubber compounding *(2, 3, 4)*. The importance of this development to the rubber industry is shown by the rapidly expanding production of oil-enriched high Mooney cold rubber in Government-operated GR-S plants. At the present time the major use of this new rubber is in automotive tires in which the improved properties provided by high Mooney elastomers are of particular advantage.

However, the authors wish to point out that this new approach to polymer modification opens up an entirely new field of rubber technology. It is now not only possible but practicable to use large amounts of low cost extending material in combination with reinforcing pigment in the production of compounds possessing quality equivalent to that of unextended normal Mooney viscosity rubbers. The possibilities of cost reduction in large volume items such as automotive tires are obvious. However, it is felt that the opportunities for modification of compound properties by use of the high Mooney technique have not yet been fully realized.

In order to demonstrate the possibilities inherent in high Mooney elastomers a study was made of the mechanical properties that can be obtained from such polymers. It was felt that an improvement in these properties, which are of vital interest to the engineer in the design of vibration isolating equipment, would extend the usefulness of synthetic rubbers. This study was made from two different approaches: (A) The effect of varying the Mooney level of the polymer on mechanical properties, and (B) The effect of varying the extending or plasticizing portion of the compound on mechanical properties.

Note: This paper was presented before the Rubber and Plastics Division, American Society of Mechanical Engineers, Columbus, Ohio, April 28-29, 1953.

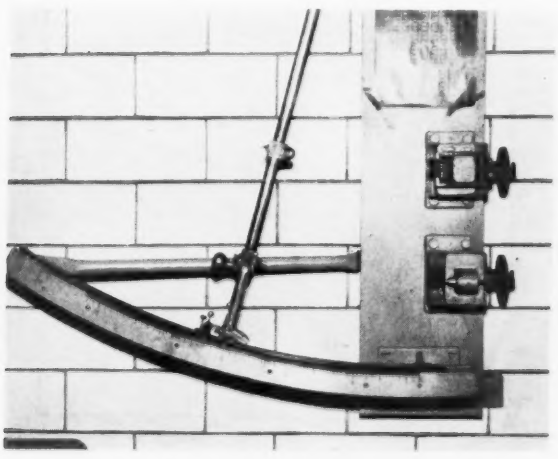

FIG. 1—Goodyear-Healey rebound tester.

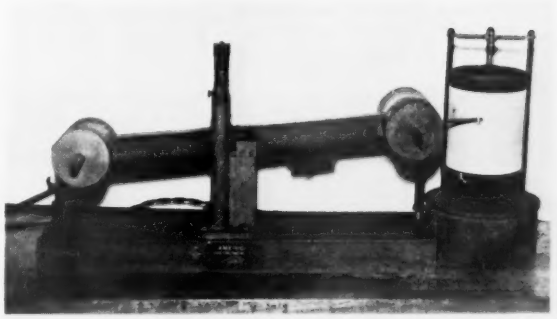

FIG. 2—Yerzley oscillograph.

Definition of High Mooney Elastomers

High Mooney elastomers can be described as those which are made up essentially of tough, high molecular weight material. This tough material has been shown to produce high tensile strength and wear resistance *(5)*. However, such polymers have been found difficult to process and previously have not been considered satisfactory rubbers. This drawback has been overcome by the addition of large amounts of low cost petroleum type softeners *(1)*. This technique has produced good quality compounds which can be processed satisfactorily in standard equipment. However, further possibilities for modifying the properties of the base polymer are now opened up by varying the type of extending material. The type of extender used now assumes a predominant role in the ultimate properties which can be obtained in a compound because of the large amounts that must be used to make the rubber processable.

Test Methods and Equipment

The physical tests used to evaluate the compounds in this study along with a brief description and the ASTM reference are as follows:

Mooney Plasticity: This test was made by measuring the shear caused by a rotating spindle within a biscuit of uncured compounded rubber. (ASTM D927-49T).

Tensile, Modulus, Elongation: These were all determined using a Scott Tester operating at a jaw separation speed of 20 inches/minute. Modulus and tensile are reported in pounds per square inch and elongation is reported in percent. (ASTM D412-49T).

Tear: These results were obtained using the same Scott Tester as above using the B die (crescent-nicked) and are reported in pounds per linear inch. (ASTM D624-48).

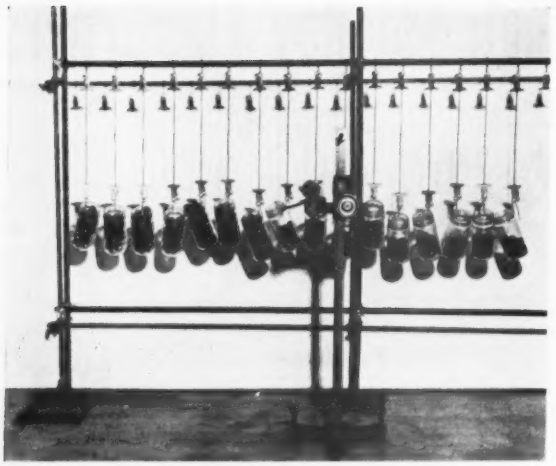

FIG. 3—Creep test apparatus.

Compression Set: This test consists of subjecting a cured pellet of rubber to a constant deflection (30-35%) and holding for 22 hours at 158°F. The amount of set is expressed as a percentage of the original deflection. (ASTM D395-49T, Method B).

Flexing: Flexing results were obtained with a De-Mattia flexing machine using a pierced specimen flexing at 310 flexures per minute. Crack growth is measured in 32nds of an inch. (ASTM D813-44T).

Hysteresis: This property was measured using a Goodrich flexometer, in which a pellet of cured rubber is flexed in compression at 1800 cycles per minute at a .175-inch stroke under a fixed load of 140 lbs. The temperature rise in the specimen is measured by a thermocouple in the bottom anvil contacting the bottom of the rubber pellet. (ASTM D623-41T, Method A).

Rebound: This test was made by measuring the percent return of a freely falling pendulum (Goodyear-Healy) after it strikes the vertical face of a rigidly held block of cured rubber. (ASTM D1054-49T. (See Figure 1).

Dynamic Modulus and Resilience: These results were obtained by using a Yerzley oscillograph. A falling loaded beam is allowed to oscillate against a pellet of cured rubber and the damped oscillations resulting from the natural frequency of the system are recorded on a chronograph. The dynamic modulus is expressed in pounds per square inch. It is equal to a constant multiplied by the moment of inertia of the beam system multiplied by the square of the natural frequency of the system. The resilience is calculated as the ratio of the vertical height of the rebound of the first cycle to the preceding vertical height of free fall. (ASTM D945-49T). (See Figure 2).

Creep: This property was determined by suspending weights at the ends of T-50 test specimens (4 inches in length). The amount of weight on each sample was chosen so the specimen was elongated 75 to 85%. The dimensional creep was measured at regular time intervals by use of a special sighting microscope (see Figure 3). At the end of 672 hours the weights were removed and the samples were allowed to retract. After two weeks the length between bench marks on each specimen was

TABLE I—COMPOUNDS USED IN STUDY OF EFFECT OF VARIATION OF MOONEY PLASTICITY

Material	Compound Identification				
	1-ME-3	3-ME-2	4-ME-2	5-ME-2	6-ME-2
No. 517 (53ML-4)	100.00	——	——	——	——
No. 513 (90ML-4)	——	100.00	——	——	——
No. 514 (126ML-4)	——	——	100.00	——	——
No. 516 (147ML-4)	——	——	——	100.00	——
No. 520 (165ML-4)	——	——	——	——	100.00
Sulfur	1.75	1.75	1.75	1.75	1.75
Zinc oxide	5.00	5.00	5.00	5.00	5.00
Stearic acid	1.50	1.50	1.50	1.50	1.50
MBTS	0.30	0.30	0.30	0.30	0.30
Copper DMDTC	0.50	0.50	0.50	0.50	0.50
HMF black	50.00	50.00	50.00	50.00	50.00
HAF black	50.00	50.00	50.00	50.00	50.00
PBNA	1.50	1.50	1.50	1.50	1.50
Circosol 2XH	50.00	50.00	50.00	50.00	50.00
Total	260.55	260.55	260.55	260.55	260.55

TABLE II—VARIATION IN PROPERTIES WITH MOONEY PLASTICITY OF ELASTOMER

Compound Number	1-ME-3	3-ME-2	4-ME-2	5-ME-2	6-ME-2
Plast. of Elastomer	53	90	126	147	165
Plast. of Compound	38	52	55	87	117
Physical Properties at Optimum Cure					
Tensile (psi)	1850	2050	2200	2500	2650
Elongation (%)	360	360	350	330	350
Modulus at 300% (psi)	1580	1725	1970	2160	2300
Shore Duro. hardness	64	65	65	66	66
Tear (lb./inch)	219	240	275	292	326
Comp. Set (%)	23	18	17	17	15
Mechanical Properties at Optimum Cure					
Goodyear-Healey rebound					
Normal (%)	53.9	53.9	56.4	55.4	57.9
Hot 212° F. (%)	69.0	70.7	73.5	73.5	76.3
Yerzley Resilience (%)	39.5	42.9	47.6	56.8	58.8
Dynamic Modulus (psi)	960	1215	1450	1775	2090

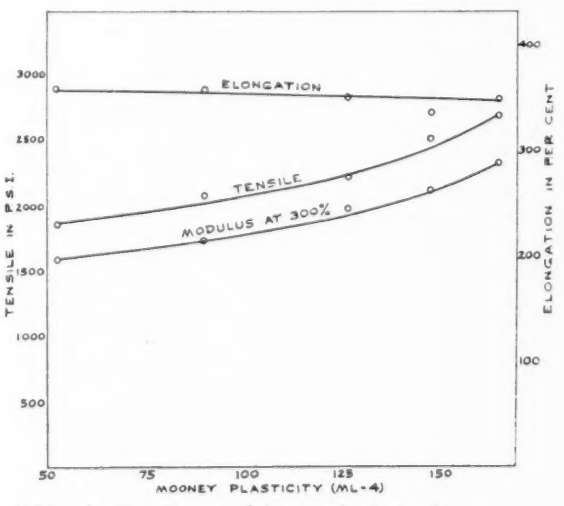

FIG. 4—Tensile, modulus and elongation versus Mooney plasticity.

measured and permanent set calculated. From the length measurements at each time period, the creep was calculated as a percentage of original elongation. The test was run at a constant temperature of 77°F.

EFFECT OF MOONEY PLASTICITY ON MECHANICAL PROPERTIES

In this phase of the study a series of polymers with varying Mooney plasticity level were produced on an experimental scale. The variation in Mooney level was obtained by a suitable choice of modifier content. These polymers were then incorporated in compounds of the type normally used in vibration isolation applications. The compositions of these compounds are shown in Table I. Various physical tests were then made on these compounds to determine the effect of the Mooney level of the base polymer on these properties and a tabulation of the test results appears in Table II.

Examination of Table II shows the effect of the increasing Mooney level of the elastomers on the properties of the compounds containing them. The Mooney plasticity of the uncured compounds is found to increase as expected with the Mooney level of the elastomers. For purposes of comparison the compounds were of identical composition except for the polymers themselves. Fifty parts of oil were added to all these compounds in order to bring the tougher rubbers in line for processing.

Tensile strength, modulus, and tear resistance show a progressive increase in values as the Mooney plasticity increases. This is in line with results previously reported *(1)*. The improvement in properties is shown graphically by Figure 4.

The practical significance of this improvement in physical properties with increase in Mooney plasticity is that it is possible to obtain greater load carrying capacity and higher tear resistance. It is to be noted also that compression set and resilience values also show a progressive improvement with increasing Mooney level of the polymers. This is of definite value in the design of vibration isolating equipment.

The effect of the Mooney plasticity level on the dynamic mechanical properties of synthetic rubber compounds has also been found to be quite specific. The amount of variation in the dynamic properties with the variation in Mooney level is substantial enough to constitute a definite trend.

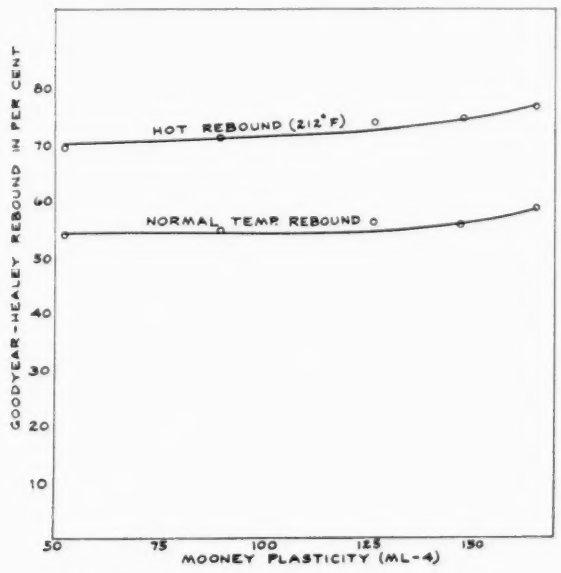

FIG. 5—Rebound versus Mooney plasticity.

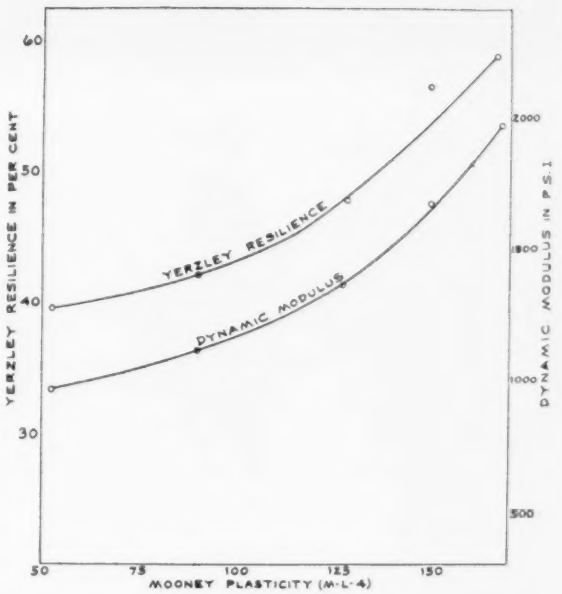

FIG. 6—Resilience and dynamic modulus versus Mooney plasticity.

In Table II the results show an increase in rebound properties of the compound as the Mooney level of the base polymer increases. Likewise, the rebound properties at high temperatures are found to improve progressively with an increase in Mooney level. This relationship is shown in Figure 5.

An increase in resilience with Mooney is also shown by results on the Yerzley oscillograph. This instrument measures approximately the same property as that of the Goodyear-Healey rebound tester. These results are shown in Figure 6.

Test results on dynamic modulus as indicated in Figure 6 show a progressive increase in value with increasing Mooney level. The value of this to the design engineer is that higher dynamic stiffness can be obtained without a corresponding increase in hardness or reduction in resilience such as is commonly observed when normal Mooney polymers are used.

Variation in Total Creep with Mooney Plasticity

Inasmuch as the phenomena of creep is one of the fundamental limitations of elastomers, and of the butadiene-styrene polymers in particular, any technique which would reduce the severity of this phenomena would be of tremendous value in many applications. As reported here, creep includes both the primary or reversible creep and the permanent set which occurs simultaneously with the primary creep. This is designated as total creep. From a practical standpoint the total creep is of primary importance to the design engineer. Theoretically, creep has been described by Tobolsky and Eyring as flow under constant stress because of breaking or slipping of secondary bonds *(7)*. Thus, the irreversible flow mechanism which occurs during constant stress and which is described as permanent set would

TABLE III—RESULTS OF CREEP TESTS ON COMPOUNDS CONTAINING ELASTOMERS OF VARYING MOONEY PLASTICITY

Comp. Number	Mooney Plast. ML-4	Orig. Elong. (%)	Total Creep at Each Time Period in Percent of Original Elongation 1 hr.	6 hrs.	20 hrs.	48 hrs.	240 hrs.	672 hrs.	Total Perm. Set % at 672 hrs.
1-ME-3	53	75.0	14.0	18.0	20.6	23.6	29.8	34.7	7.9
3-ME-2	90	76.5	12.8	16.7	18.9	22.0	27.6	33.2	6.4
4-ME-2	126	79.2	11.6	15.2	17.3	20.1	25.3	31.5	6.6
5-ME-2	147	76.4	9.3	12.8	15.6	17.5	22.2	27.0	4.3
6-ME-2	165	78.2	7.4	10.8	12.7	15.0	19.0	22.5	4.3

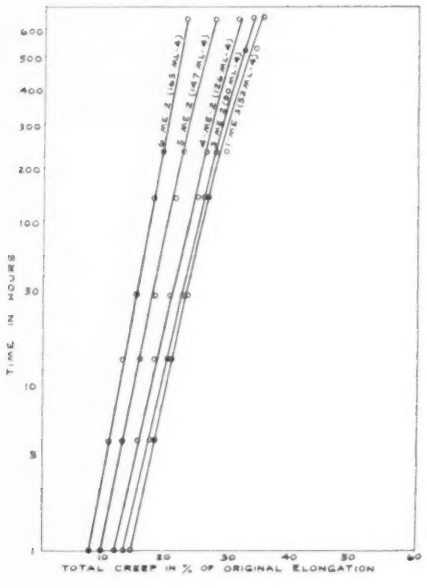

FIG. 7—Total creep versus Mooney plasticity.

normally not be considered part of the creep phenomena. However, since the combination of effects is of most practical value, no distinction was made during this study.

As previously described, the method and equipment used were similar to those used by Gehman and reported in 1949 *(6)*. T-50 specimens cut from tensile sheets of the compounds containing elastomers of varying Mooney plasticity level were stretched to approximately the same elongation by application of weights to the lower end of the specimens. The progressive increase of the specimens was then checked at various periods. Creep is defined as a percentage change in elongation, compression, or shear in a specified time. Since in the present investigation the specimens were tensile stressed, the creep at any time is given as a percentage of the original elongation. The calculated values have been tabulated in Table III and have been plotted against the time in hours on a semi-logarithmic chart in Figure 7. As can be observed, the curves for total creep follow the same pattern as do the other mechanical properties. This is significant in that it demonstrates the definite superiority of the high Mooney elastomers as shown by lower plastic flow during the creep and compression set tests. Such improvement indicates the greater stability of high Mooney polymers. Thus, the use of this technique provides definite opportunities for improving the mechanical properties of synthetic rubber compounds.

In order to illustrate the practical application of the high Mooney system and the method by which the high Mooney viscosity polymers must be compounded in order to utilize their full potential of processability, retention of properties and economy, the compounds shown in Table IV were prepared. The physical properties of these compounds are given in Tables V and VI and the creep curves are plotted in Figure 7-A. Here it is shown that as the Mooney viscosity of the polymer increases, more oil extender is required to keep the com-

TABLE IV—COMPOUNDS USED TO STUDY ADJUSTED OIL AND PIGMENT LOADING

	1ME5	3ME5	4ME4	5ME5	6ME5
No. 517 (53ML4)	100.00	—	—	—	—
No. 513 (90ML4)	—	100.00	—	—	—
No. 514 (126ML4)	—	—	100.00	—	—
No. 516 (147ML4)	—	—	—	100.00	—
No. 520 (165ML4)	—	—	—	—	100.00
Circosol 2XH	40.00	50.00	60.00	70.00	80.00
HAF	50.00	53.00	57.00	60.00	64.00
HMF	50.00	54.00	57.00	61.00	54.00
Zinc Oxide	5.00	5.00	5.00	5.00	5.00
Stearic Acid	1.50	1.50	1.50	1.50	1.50
PBNA	1.50	1.50	1.50	1.50	1.50
MBTS	0.25	0.30	0.35	0.40	0.45
Copper DMDTC	0.45	0.50	0.55	0.60	0.65
Sulfur	1.625	1.75	1.875	2.00	2.125
Totals	250.325	267.55	284.775	302.00	319.225

TABLE V—PHYSICAL PROPERTIES OF COMPOUNDS FROM VARIABLE MOONEY POLYMERS

Compound No.	1ME5	3ME5	4ME4	5ME5	6ME5
Compounded Mooney Plasticity	55	60	64	65	77
Physical Properties at Optimum Cure					
Tensile (psi)	2100	2200	2110	2340	2420
Elongation (%)	375	350	300	322	300
Modulus @ 300% psi	1850	2050	2110	2195	2420
Shore Durometer	68	65	64	62	62
Compression Set (%)	21	18	14	15	13
Dynamic Properties at Optimum Cure					
Goodyear-Healey Rebound					
Normal (%)	52.5	51.5	53.9	53.5	54.4
Hot 212°F. (%)	67.8	67.3	73.5	71.2	74.6
Yerzley Resilience (%)	39.5	41.0	44.4	47.5	50.0
Dynamic Modulus (psi)	1710	1470	1665	1520	1587

TABLE VI—CREEP RESULTS OF COMPOUNDS WITH ADJUSTED OIL AND PIGMENT LOADING

Compound Number	Mooney Plasticity Raw ML-4'	Mooney Plasticity Compounded ML-4'	Original Elongation Percent	Total Creep at Each Time Period in Percent of the Original Elongation 1 hr.	24 hrs.	48 hrs.	288 hrs.	361 hrs.	480 hrs.	672 hrs.	% Total Permanent Set at 672 hrs.
1ME5	53	55	66.1	17.1	25.6	27.8	34.3	35.2	36.5	40.0	4.7
3ME5	90	60	65.6	14.2	20.5	22.5	27.4	28.3	29.1	31.8	3.4
4ME4	126	64	65.7	11.7	17.5	19.0	25.4	27.1	*	*	*
5ME5	147	65	66.5	9.7	15.5	17.0	21.4	22.6	23.5	26.3	2.8
6ME5	165	77	67.4	9.6	15.2	16.7	21.0	22.2	23.3	25.6	2.8

* Test interrupted.

pound at a processable level. (See compounded Mooney). At the same time, the black loading is increased to balance the added oil which is now regarded as part of the rubber hydrocarbon. It is also necessary to increase the amount of curing agents as the percentage of rubber in the formula decreases in order to maintain approximately the same level of cure.

It is evident from an examination of the data that all the physical properties except durometer hardness either remain essentially the same or actually improve as the Mooney viscosity of the polymer increases. The fall off in durometer hardness, as shown by the data, has been found to be characteristic of oil-extended high Mooney rubber compounds. However, the tensile, Goodyear-Healy rebound, static and dynamic modulus all remain at a comparable level. There is actually a trend toward improved compression set and Yerzley resilience, although the higher Mooney viscosity rubbers are more diluted with oil and black. Admittedly, this slight improvement in compression set and Yerzley resilence could be partially due to an increase in the curing agents. However, the fact that the static modulus values are all in the same range suggests that this effect is of a minor nature.

It should be pointed out that Compound 1-ME-5 may be somewhat overplasticized and Compound 6-ME-5 may be slightly underplasticized as judged from the compounded Mooney values. A closer balance of plasticity would undoubtedly show the physical properties to be even more consistent.

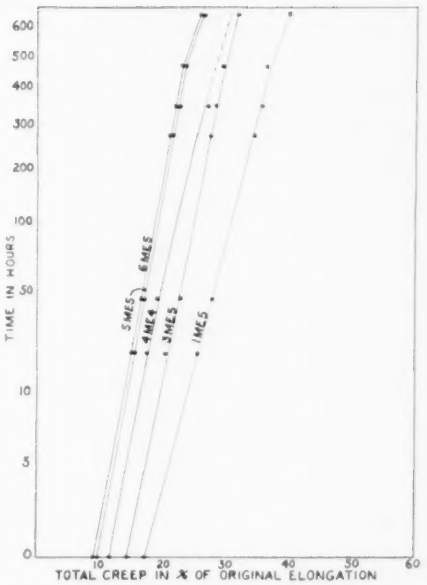

FIG. 7-A—Total creep versus Mooney plasticity on adjusted compounds.

EFFECT OF DIFFERENT SOFTENERS ON MECHANICAL PROPERTIES

The second phase of this study deals with the wide range of properties that can be obtained in the high Mooney rubber system by simply varying the type of softener used in compounding the rubber.

Heretofore, the rubber compounder has been limited in both the choice and extent of properties he could compound into natural or synthetic rubber by the fact that he could only put limited amounts of modifying ingredients into his compound without encountering serious losses in the over-all physical properties. With the high Mooney systems such limitations do not necessarily exist because the compounder can, and indeed must, use large amounts of softener and/or plasticizer and balance these with reinforcing type pigments *(1)*. In other words, if we consider the high Mooney rubber plus softener as the rubber hydrocarbon content of the compound, the compounder by judicious choice of kind and amount of softener can now control over 30% of the composition of the rubber he uses. This is in addition to the usual controls of acceleration, amount of sulfur, etc.

TABLE VII—COMPOUNDS USED IN STUDY OF EFFECT OF DIFFERENT SOFTENERS ON MECHANICAL PROPERTIES

GR-S CONTROL COMPOUND

GR-S 100 (52 ML-4')	100.00
Zinc Oxide	3.00
Stearic Acid	2.00
Circosol 2XH	7.00
HAF Black	50.00
Santocure	1.00
Sulfur	1.75

BASIC EXPERIMENTAL COMPOUND

High Mooney Polymer (145 ML-4')	100.00
Zinc Oxide	3.00
Stearic Acid	1.00
Softener (see Table VII-A)	50.00
HAF Black	75.00
Santocure	1.20
Sulfur	2.00

TABLE VII-A—DESCRIPTION OF SOFTENERS USED

Softener	Description	Solidification Point	Supplier
Circosol 2XH	A special petroleum base oil commonly used in the rubber industry as a softener and extender. Is relatively non-staining.	—12° C.	Sun Oil Co.
Sundex 53	A petroleum base oil also commonly used in the rubber industry as a softener and extender. Contains a higher percentage of aromatic constituents than Circosol 2XH. Is somewhat staining.	21° C.	Sun Oil Co.
Dioctyl Adipate	Ester type plasticizer used to obtain extreme low temperature performance in rubber. Also commonly used in compounding vinyl resins and nitrile type rubbers.	—68° C.	Ohio Apex
Cumar MH 2½	Cumar resin commonly used in limited quantities in rubber compounding to improve processing and physical properties of synthetic rubber compounds. Solid resin.	115-125° C.	Barrett
Aromatic Plasticizer No. 25	Special resin type plasticizer for rubber. A liquid resin.	25° C.	Harwick Std. Chemical Co.
Chlorowax 70	Chlorinated paraffin-resinlike material compatible with synthetic rubber. Imparts fire resistant properties.	95-110° C.	Diamond Alkali Co.

The compounds studied in this section of the paper were selected to illustrate, to some degree, this divergency in physical properties that can be obtained in the high Mooney rubber system. The compounds were all made on the simple tread type recipes shown in Table VII, while a description of the softeners used appears in Table VII-A. Table VIII identifies the compounds along with the softener used and lists the physical properties at optimum cure. Table IX gives the creep test results. The physical results are illustrated graphically in Figures 8 through 12.

As can be seen from the results, the more highly resinous materials (high pour point) like Cumar tend to give high tensile, elongation, tear, dynamic modulus, and good flexing, whereas lower pour point materials like DOA give low tensile, elongation, tear, dynamic modulus, and poor flexing. Conversely, the resin-type materials show the poorer rebound (resilience) and hysteresis properties, whereas the monomeric type materials such as DOA show the better hysteresis properties and best resilience.

It is interesting to note the relationship between dynamic modulus and hysteresis with the more resinous, higher solidification point softeners. These properties are higher with the higher solidification point softeners and become lower as the solidification point goes down.

TABLE VIII—PROPERTIES OF COMPOUNDS CONTAINING DIFFERENT TYPES OF SOFTENERS

Compound Number	1EP1	1EP3	1EP16	1EP40	1EP70	1EP80	1EP200
Softener	Circosol 2XH	Dioctyl Adipate	Chloro-wax 70	AP No. 25	Sundex 53	Cumar MH 2½	GR-S Control
Compounded Mooney (plasticity)	66	62	109	73	64	75	61
Physical Properties at Optimum Cure							
Tensile (psi)	2665	2140	4005	3100	2900	3600	2690
Elongation (%)	437	337	475	525	427	665	405
300% Modulus (psi)	1525	1910	2610	1435	1550	1450	1545
Tear (p/i)	217	169	410	306	291	443	306
Durometer (Shore)	55	55	72	60	57	65	64
Compression Set (Method B)	13.7	16.9	19.3	18.3	13.8	16.1	21.1
Dynamic Properties at Optimum Cure							
Dynamic Modulus (psi)	1090	1110	2700	1410	1310	2210	1540
Flex Hysteresis (°F.)	56	51	94	72	58	93	81
Permanent Set	2.4	1.9	9.0	3.0	2.0	5.6	1.3
Static Compression	16.9	17.5	8.5	18.2	16.4	16.0	12.3
Flex Cracking *	18	1	33	48	15	100	28

* Thousands of flexures to ½-inch cut growth.

TABLE IX—RESULTS OF CREEP TESTS ON COMPOUNDS CONTAINING DIFFERENT TYPES OF SOFTENERS

Compound	Softener	Orig. % Elongation	Total Creep at Each Time Period in Percent of Original Elongation 1 hr.	6 hrs.	20 hrs.	48 hrs.	240 hrs.	672 hrs.	Total Perm. Set % at 672 hrs.
1-EP-1	Circosol 2XH	80.8	7.3	10.1	12.2	14.4	20.0	25.3	4.3
1-EP-3	Dioctyl Adipate	80.3	5.8	8.2	10.2	12.1	16.4	20.3	4.6
1-EP-16	Chlorowax 70	82.0	10.9	15.6	18.5	21.0	26.8	33.5	3.5
1-EP-40	AP No. 25	81.0	18.1	22.8	26.2	29.0	36.0	42.5	5.1
1-EP-70	Sundex 53	80.4	12.0	15.1	18.0	20.0	25.5	31.0	4.0
1-EP-80	Cumar	79.6	22.3	29.0	34.2	38.3	49.0	58.0	5.3
1-EP-200	GR-S	82.0	9.8	15.8	20.4	23.6	31.5	40.0	5.9

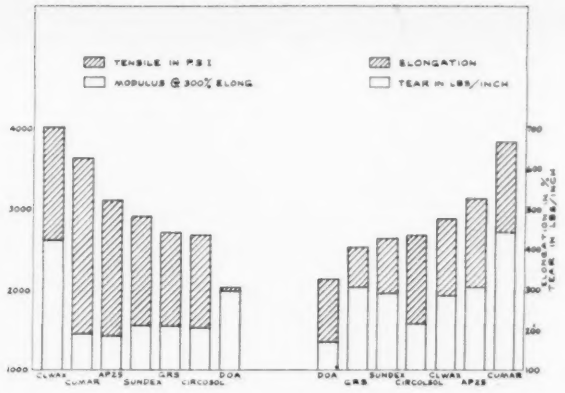
TENSILE IN P.S.I.
MODULUS @ 300% ELONG.
ELONGATION
TEAR IN LBS./INCH
CLWAX CUMAR AP25 SUNDEX GRS CIRCOSOL DOA
DOA GRS SUNDEX CIRCOSOL CLWAX AP25 CUMAR

FIG. 8—Physical properties versus types of softener.

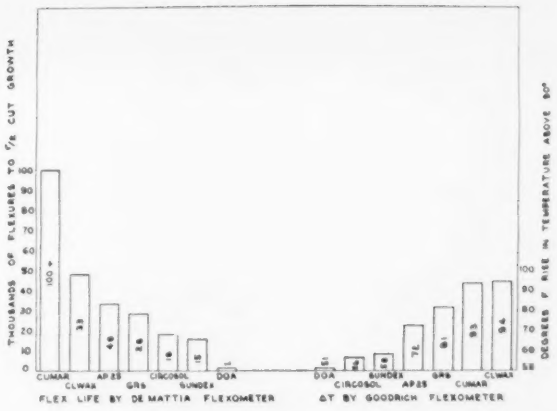
THOUSANDS OF FLEXURES TO 1/8 CUT GROWTH
DEGREES F RISE IN TEMPERATURE ABOVE 80°
CUMAR CLWAX AP25 GRS CIRCOSOL SUNDEX DOA
DOA CIRCOSOL SUNDEX AP25 GRS CUMAR CLWAX
FLEX LIFE BY DE MATTIA FLEXOMETER
ΔT BY GOODRICH FLEXOMETER

FIG. 10—Flexing and hysteresis versus types of softener.

It is also interesting to note how closely the range of any one physical property for the series, such as tensile, follows the scale of solidification points for the softeners used. The one notable exception to this otherwise regular pattern is the creep characteristics of the compound containing Chlorowax 70. This material shows creep characteristics similar to those of GR-S whereas its other physical properties indicate that its creep curve should fall closer to that of Cumar resin.

It should be noted, however, that the material used to modify the properties of the rubber compound must fill the dual role of softener as well as modifying agent. Also, all the properties imparted to the compound by any one extender are not necessarily the best balance. The compounder must make a judicious choice of extender or combination of extenders to satisfy the requirements of his particular problem.

As a further illustration of the wide range of physical properties obtainable by varying the softener component in the high Mooney rubber system, it should be pointed out that a compound containing a large quantity of a low freezing point softener like DOA has excellent low

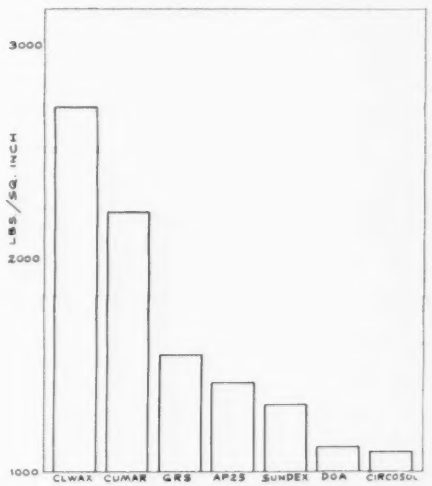

FIG. 11—Dynamic modulus versus types of softener.

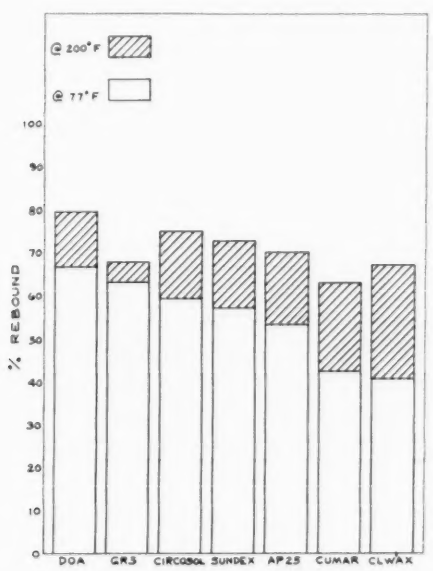

FIG. 9 — Rebound versus types of softener.

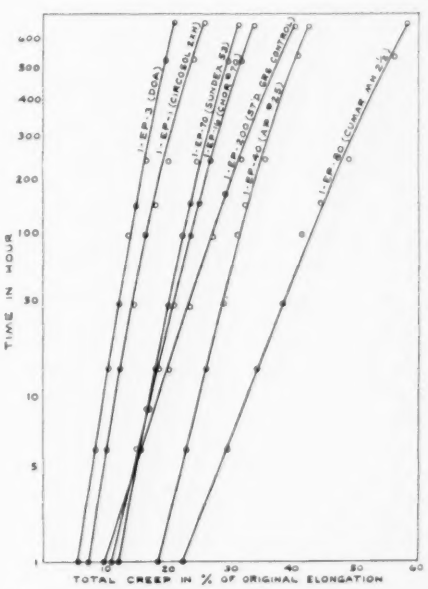

FIG. 12—Total creep versus types of softener.

TABLE X—VALUES FOR ADHESION TO STEEL

Durometer of Stock	ASTM D429-47T Pounds per sq. in.
40	510
50	540
60	765

temperature performance. A compound containing a large quantity of a material like Chlorowax 70, when properly formulated, has excellent fire resistant properties. Regular GR-S, when compounded with the necessary amounts of softener required to give these special properties, would be so deficient in over-all physical properties as to be worthless. Another example is the use of resin softeners which will produce pure gum compounds having over 1000 psi tensile, and when compounded with sufficient sulfur will produce high quality ebonite. By blending softeners, combinations can be made that will give a vast number of intermediate properties.

Bonding of High Mooney Elastomers

Frequently, it is necessary to bond vibration insulation type compounds to metals. The question may arise as to the possibility of bonding these extended high Mooney elastomers to metal. This question is best answered by adhesion results on production type compounds. Table X illustrates some results using regular production compounds of three different hardness levels—40, 50, and 60 durometer. These compounds all contain a petroleum oil-type softener. Figure 13 illustrates the actual adhesion test (ASTM D429-47T). On the left, is an unpulled test specimen; in the center, in the jaws of the testing machine, is a test specimen being pulled; on the right is a test specimen that has been pulled (over 500 psi) showing that 100% of the failure was in the rubber itself and no failure occurred at the adhesion surface.

Conclusion

This study of variation of mechanical properties with the Mooney level of the elastomer and the effect of extending materials on the over-all properties of compounds containing the same high Mooney elastomer shows the possibilities of this new approach to synthetic rubber compounding. The results show that the high Mooney rubber is inherently a better rubber than normal Mooney rubber in that the mechanical properties such as tensile, rebound, compression set, and resistance to creep all improve as the Mooney viscosity of the polymer increases. Moreover, it is shown that there is no real loss in physical properties even when the high Mooney rubber is compounded with large amounts of low cost oil and black in order to keep the necessary balance between good physical properties and processability. It is also shown that a wide range of physical properties can be obtained by a suitable choice of softener.

Other important properties such as low temperature flexibility, flame resistance, and high pure gum tensile are also obtainable by a suitable choice of extender in combination with a high Mooney elastomer. The unique advantage of high Mooney compounding technique is that the technical man now has a new tool with which to modify materials and products over a wide range of properties and at a lower cost.

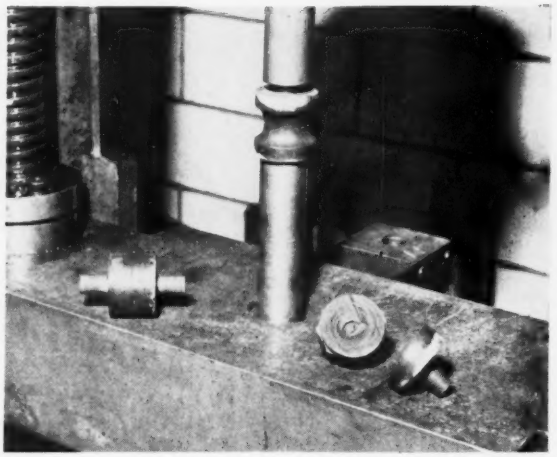

FIG. 13—Metal adhesion test.

ACKNOWLEDGMENT

Acknowledgment is given to the General Tire and Rubber Company for their permission to publish this paper and also to the members of the General Tire Research Laboratory for their many helpful suggestions in this work.

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Rubber and Plastics Mill Drives. (Bulletin GEA-5887). General Electric Co., Schenectady 5, N. Y. 8½ x 11 in. 4 pp.

This new bulletin on rubber and plastics mill drives features enclosed synchronous mill motors with rubber-mill control. Descriptions and advantages of the equipment are outlined. Application photographs are included as is a listing of additional bulletins which are available on associated equipment.

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Worthington Equipment for Industry. (Bulletin WP-1099-B61). Worthington Corp., Harrison, N. J. 8½ x 11 in.

Special features, types, sizes and capacities of the company's various product lines of industrial equipment are described in this bulletin. The application of each of these lines in various industries is also considered. A number of illustrations show, as representative samples, how Worthington products apply in different types of industry.

How Multiple Phenolic Castings Are Reducing Latex Dipping Costs

A NEW approach to dipping is helping manufacturers of latex products to speed up mass production, with more economical utilization of labor as well as time, and other savings. Its effectiveness proved in several current large-scale applications, the procedure is based on making castings of phenolic resin to provide any desired number of exact duplicates of a master pattern, bypassing the costly necessity of machining numerous original molds.

A predictable consequence is greater use of latex in manufacturing a number of consumer items—since the economy and other production advantages created by this development are making it possible for dipped footwear and other latex products to regain competitive advantages, and recover ground lost to apparel items and other mass-market commodities made of alternative materials such as fabric and plastic film.

One of the users of the phenolic casting method is the U. S. Rubber Co., for the manufacture of rubber footwear. Another is the Woonsocket Rubber and Plastic Co., Inc., (formerly the American Wringer Co.) in Woonsocket, R. I., which developed its production system in collaboration with the Marblette Corporation of Long Island City, N. Y.

At the Woonsocket Rubber plant, the phenolic casting procedure is speeding the annual output of hundreds of thousands of one-piece, form-fitting, ventilated latex girdles. These girdles are made in four sizes—small, medium, large, and extra large—with corresponding patterns made to the same design for each size. They are being produced so economically that one of the country's leading mail order firms is now retailing them at far less than competitive garments.

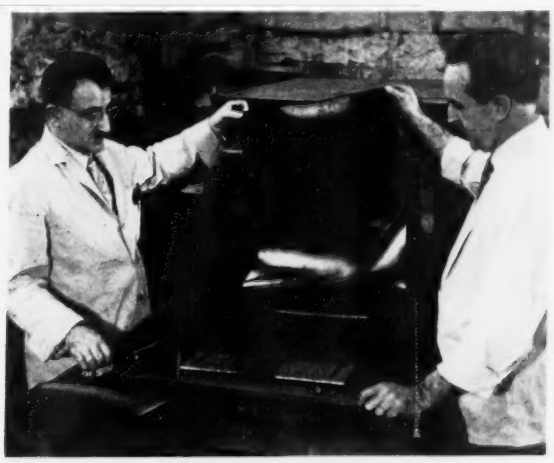

FIG. 1—In the preparation of phenolic castings for latex dipping to produce rubber girdles at the Woonsocket Rubber plant, vinyl sheeting is laid over the metal frame and the original pattern built up with vinyl. This preparation occurs prior to insertion in a hydraulic press.

FIG. 2—After the hydraulic press operation, half of the vinyl mold is complete, with the details of the wood-and-steel master pattern reproduced. An identical second half of a two-part mold is produced in the same manner.

The Woonsocket production method was inspired by the realization that a price low enough to win the battle for the budget-wise consumer's dollar would be possible only if many molds could be simultaneously dipped into the latex which then solidifies around the patterned forms.

The answer to this problem was found in casting virtually unlimited quantities of these dipping forms from phenolic resin in vinyl molds, at an estimated cost of only $6 each—including materials and labor—from a machined original which costs a contrastingly large $70. No loss of quality is said to be entailed in this innovation. On the contrary, its users say that end-product quality is improved, with every detail of the design faithfully reproduced.

Apart from the fact that the phenolic dipping forms are produced in a mere fraction of the time that it would take to machine every mold separately and expensively from combinations of wood and metal, another advantage lies in the fact that unskilled factory hands can be employed in place of highly-paid, technically-trained workmen in most stages of their fabrication and handling.

Step number one occurs with the fabrication of the original pattern of wood and steel. This pattern, shaped as the girdle to be ultimately derived from it, has the gentle curvature of a woman's hips. Its surface is made absolutely smooth, without any roughness or undesirable detail such as even wood grain, which would be repeated in the subsequent steps of faithful reproduction.

FIG. 3—A gasket is cut to facilitate subsequent opening of the two-part mold, after closures have been set into the edges of the steel backing plates.

The wood-and-steel master is set into a heavy steel chase which is placed on a thin sheet of steel laid on the make-up table to serve as a tray. A metal frame half the depth of the pattern fits around it, inside the chase. All exposed surfaces of the pattern and of the cut-out frame are coated with a release agent.

FIG. 4—After the steel-backed double mold of vinyl is preheated and the closure nuts tightly fastened, the mold is held at a 45° angle for careful pouring of a rinse made of phenolic resin. It is held at the same angle when the casting resin is poured.

Sheets of Koroseal supplied by the B. F. Goodrich Co. are cut precisely to shape and inserted as build-up around the shoulders of the pattern, and then a large sheet of vinyl is laid over-all (Figure 1). This sheet is then topped with a backing plate of quarter-inch steel coated with Plio-Bond adhesive cement furnished by the Goodyear Tire and Rubber Co. The plate bonds firmly to the vinyl sheet.

After the prepared chase has been kept in a hydraulic press for a specified time, with controlled heat maintained for a time and then cold water circulated through the platens, half of the vinyl mold is completed (Figure 2). With the pattern reversed, the build-up, release agent coating, and pressing are repeated in the same manner. This provides the second identical half of the vinyl mold, each backed with steel plate for rigidity in subsequent handling.

To obtain accurately measured alignment of the holes for the studs that hold the mold halves together during the casting operation which is to follow, the original pattern is temporarily inserted between the mold halves, and the edges are fastened with clamps. Holes are drilled, the vinyl leaves are again separated, and the original is set aside. Next comes the making of a gasket to facilitate opening of the double mold after each cast is made (Figure 3).

The mold is then heated for two hours at 185° F. in an ordinary oven, after the two halves have again been put together. With the closure nuts tightened securely, the warm mold is rinsed (Figure 4) with a mixture of five pounds of Marblette Phenolic Resin No. 71, a quick-curing, heat-setting liquid, with five pounds of denatured alcohol, and a half-pound of acid. The rinse remains for just a brief moment before being poured out—just long enough to coat the vinyl surfaces and to insure a minimum amount of trapped air in the casting resin poured in next.

This casting resin is the same ivory-colored phenolic liquid—Marblette No. 71—to which 10% acid by weight

FIG. 5—After vibration, the filled vinyl mold is baked for four hours, the hardened phenolic pattern duplicate is then removed, and the vinyl mold is quickly refastened while still in proper preheat condition for a subsequent casting of phenolic resin.

FIG. 6—Here the latex girdle is being removed from a phenolic pattern duplicate. Securely held upright in metal shoes, other dipping forms stand by for ready use.

FIG. 7—Flocked, trimmed and perforated, with garters attached, this latex girdle is ready for packaging.

has been added an hour beforehand, and the preparation held at room temperature. The pouring of the resin into the steel-encased vinyl mold is done in the same way as the rinsing—with the mold tipped at a 45° angle to avoid trapping air at the bottom of the elongated rectangle. Space is left at the top, near the lip of the mold, to allow for expansion of the resin as it cools.

On a vibration platform, the filled vinyl mold is shaken for 15 minutes to accelerate the freeing of any air bubbles which might cling to the sides. As these rise, the top surface is brushed with alcohol to dissolve their skin and break them.

The next step is baking for four hours at 185° F. Then the hardened phenolic form, in the exact shape and dimensions of the original pattern, is removed from the unbolted halves of the mold (Figure 5). At this point, there occurs one of the most significant time savings in the entire process, since the molds are still at a satisfactory preheat temperature for another pouring of the casting resin, and they are immediately readied for this subsequent pouring as soon as the cured forms are removed. The two halves of the vinyl mold are speedily refastened. Without delay, the workmen proceed to repeat the steps of pouring, vibrating, and baking.

The resultant ivory-colored production forms show remarkable craze resistance, good detail as the result of the low viscosity of the resin, and the near absence of internal heat which avoids the need for a filler and thus minimizes the incidence of air bubbles.

Despite the properties of the material and the care taken to prevent the formation of air bubbles in the casting process, some of these bubbles do occur in and around the sharp edges of the lower end of the form. These minor surface defects are patched up by Lav-Metal, a gray-colored substance made by Alvin Products, Inc., with very loose consistency, and removable without damage by a methyl-ethyl-ketone solvent. It is thoroughly compatible with the Marblette phenolic, and it makes for easy correction of the production form in the last stage prior to latex dipping. After the Lav-Metal is hardened, it is sandpapered off. The entire surface of the pattern duplicate is then brought to a fine smoothness by abrasive sanding.

The final girdle production stage is at hand after attachment of each phenolic form to one of a number of metal shoes used to grip the pattern duplicates during dipping. Groups of the forms are dipped at one time into the liquid latex. After speedy solidification, the rubber girdle is pulled off each phenolic casting duplicate (Figure 6), and the forms are ready for another multiple immersion, and so on time after time. Long production runs have become an economic reality because the smoothly polished surface of the cast phenolic forms is unaffected by many repetitions of latex dipping, and wear becomes a negligible factor.

All that remains after the girdles are removed from the forms is the finishing that is required before they go through the distribution channels and on to the ultimate customer. They are flocked, trimmed and perforated, garters are attached, and each one is individually packaged. A finished girdle is seen in Figure 7.

For Milady, the end consequence is what the advertising copywriters call figure flattery; for industry, it is a revealing indication of the partnership between rubber and plastics in creating production efficiency to make even everyday products better and less costly.

Freezing-Point Depression Apparatus

A new freezing-point depression apparatus, which permits rapid, dependable and accurate cryoscopic osmotic-activity determinations of 1 cc samples of aqueous solutions, is currently available from the American Instrument Co., Inc., Silver Spring, Maryland. Among its uses are the determination of osmotic pressure, molecular weight of some water-soluble compounds and molecular weight of many organic compounds soluble in benzol. The accuracy of the method is better than plus-minus 2% or 1 milliosmole per liter, whichever is greater, over the range of 0 to 1.85 "osmolal" concentrations. Among its features are: (1) its simple refrigerating system obviates the use of baths; (2) gives reproducible rates of cooling; (3) the freezing unit contains air at near freezing temperature, thus providing isolation and control to maintain a reasonably constant temperature; (4) temperature gradient variations are held to a minimum; (5) determinations are run in standard 13x100 Pyrex test tubes; (6) the sample is visible throughout the determination; (7) the end-point is always compared to readings of standard solutions.

Permanence of Plasticizers in GR-S Vulcanizates Exposed to Weather

By ROSS E. MORRIS and ARTHUR E. BARRETT

Rubber Laboratory, Mare Island Naval Shipyard, Vallejo, Calif.

THIS Laboratory has published the results of an extensive survey of plasticizers for GR-S stocks to be used at low temperatures *(1)*. In that paper it was pointed out that, notwithstanding how much improvement in cold resistance results from the use of a certain plasticizer, for most applications the plasticizer must also be non-volatile and non-extractable by water if the cold resistance of the vulcanizate is to be retained in service. Data from laboratory measurements of volatility and water extractability of the best low temperature plasticizers from the GR-S vulcanizates were given to illustrate the considerable difference between plasticizers in these respects.

In order to obtain practical information on the permanence of plasticizers in GR-S stocks, the stocks containing the best plasticizers for low temperature service selected from the previous investigation, as well as stocks containing certain commonly-used hydrocarbon-type plasticizers, were weather-aged concurrently at Mare Island (California), Bremerton (Washington), and Point Barrow (Alaska) for two years from March, 1950, to February, 1952, inclusive. The rainfall and/or temperatures differed considerably at these exposure stations during the two-year period, as shown in Table I. Mare Island and Bremerton had similar weather from the standpoint of temperature, but Bremerton had 67% more rainfall than Mare Island. Both the temperature and the rainfall were much lower at Point Barrow than at Mare Island or Bremerton.

Materials and Tests

The basic recipe for the GR-S stocks is given in Table II. The 39 plasticizers which were individually tested in the basic recipe are listed in Table III. The stocks were molded into 1 x 3-inch slabs, ¼-inch thick. These slabs were fastened to aluminum plates without placing the vulcanizates under strain. The aluminum plates were mounted on racks at the exposure stations in a sloping position facing south. The angle of the specimens relative to the horizontal plane was approximately equal to the latitude of the respective exposure stations, namely, 70° at Point Barrow and 45° at Bremerton and Mare Island. One specimen of each vulcanizate was exposed at each station.

The vulcanizates were tested for cold compression set *(2)* and Rex hardness *(3)* before and after exposure to weather at the three stations. The cold compression set test followed the procedure of the A.S.T.M. hot compression set test *(4)* with certain exceptions. The exceptions to the A.S.T.M. procedure and other pertinent information regarding this low-temperature test were as follows: (1) the specimens were ¾-inch diameter x ¼-inch right cylinders cut from the ¼ x 1 x 3-inch slabs, (2) the specimens were compressed 40% during conditioning, (3) the conditioning time and temperature were 94 hours in methanol at −35° F., (4) the specimens were released from compression, allowed to recover and measured for thickness while in methanol at −35° F., (5) duplicate specimens of each vulcanizate were tested. Rex hardness measurements were made at 82° F., and at −40° F. after conditioning the specimens 16 to 24 hours in air at this latter temperature. The readings on the Rex Gauge were taken to the closest 2½ points, i.e., when the reading was between the 75 and 80 indices on the scale of the gauge, the reading was recorded as 77½.

Cold compression set is a good index of the behavior of vulcanizates at low temperatures since it is a measure of the essential property of elastic recovery from deformation. For example, it has been shown by this laboratory *(5)* that the compression set of a vulcanizate at a low temperature correlates with its ability, as a gasket, to seal fluid pressure at that temperature. The higher is the compression set, the poorer is the sealing ability.

Note: The opinions or assertations in this article are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

TABLE I—TEMPERATURES AND RAINFALL AT EXPOSURE STATIONS

(From March, 1950, to February, 1952, inclusive)

Exposure Station	Approximate Temperatures (°F.)* Minimum	Average	Maximum	Rainfall (inches)
Mare Island	34	59	95	47.1
Bremerton	30	55	105	78.7
Point Barrow	−40	12	64	10.8

* Maximum and minimum temperatures were noted during the 24-hour period on approximately the same day of each month. The tabulated data for each exposure station consists of the lowest, the highest, and the average of the 48 readings.

TABLE II—BASIC RECIPE FOR GR-S STOCKS

(Cure: 20 Mins. @ 310° F.)

GR-S	20
GR-S 10*	80
Philblack A*	40
Zinc oxide	5
Heliozone	1
Plasticizer	20.2 volumes
Methyl Tuads	1
Sulfur	1

* Contained in GR-S X419.

TABLE III—EFFECT OF WEATHER AGING ON LOW-TEMPERATURE PROPERTIES OF VULCANIZATES

(Plasticizers listed in order of increasing average compression set after aging)

Trade Name of Plasticizer	Chemical Name (if different from Trade Name)	Source	Sp. Gr.	Compression set at −35° F.					Rex Hardness				
				Initial %	MI[a] %	BI[b] %	PBI[c] %	Av[d] %	Initial @ 82° F.	Initial @ −40° F.	MI[a] @ −40° F.	BI[b] @ −40° F.	PBI[c] @ −40° F.
FX 105	di-n-hexyl adipate	U. S. Industrial Chem.	0.93	27	27	27	28	27	50	60	75	77½	72½
FX 104	di-n-amyl adipate	U. S. Industrial Chem.	0.95	25	28	29	28	28	50	57½	77½	77½	72½
Plastolein 9058	di-2-ethylhexyl azelate	Emery Industries	0.92	31	30	30	33	31	45	57½	75	72½	72½
Adipol 2 EH	di-2-ethylhexyl adipate	Ohio-Apex	0.92	36	29	32	33	31	45	60	77½	77½	77½
di-caprayl sebacate		Hardesty Chemical	0.90	36	30	31	33	31	45	62½	70	77½	75
ISO X22	not disclosed	Industrial Solvents	0.94	28	33	31	31	32	50	57½	77½	82½	75
Adipol 10A	di-iso-octyl adipate	Ohio-Apex	0.92	31	31	29	35	32	47½	57½	77½	80	80
di-iso-octyl sebacate		Binney & Smith	0.92	33	32	28	36	32	47½	65	80	82½	75
di-iso-octyl adipate		Binney & Smith	0.93	34	30	32	33	32	45	65	77½	77½	75
di-2-ethyl hexyl succinate		C. P. Hall Co.	0.93	35	30	32	34	32	45	62½	87½	77½	80
di-iso-octyl succinate		C. P. Hall Co.	0.93	32	34	30	35	33	45	65	72½	77½	77½
Monoplex DOS	di-octyl sebacate	Resinous Products	0.91	36	31	32	35	33	45	67½	72½	77½	77½
Dinopol	di-n-octyl phthalate	Ohio-Apex	0.97	37	32	32	35	33	47½	65	77½	82½	80
Flexol TOF	tri-2-ethylhexyl phosphate	Carbide & Carbon	0.92	32	38	31	33	34	45	62½	77½	77½	72½
di-hexyl sebacate		Hardesty Chemical	0.91	33	33	31	38	34	47½	67½	77½	82½	75
FX 103	di-n-butyl adipate	U. S. Industrial Chem.	0.96	26	38	38	29	35	50	62½	87½	87½	77½
Plasticizer 3560	di-iso-butyl azelate	C. P. Hall Co.	0.93	30	39	33	34	35	47½	65	82½	82½	77½
Adipol BCA	di-butoxyethyl adipate	Ohio-Apex	0.99	33	34	40	30	35	47½	65	77½	82½	77½
Flexol 4GO	polyethylene glycol di-2-ethyl hexoate	Carbide & Carbon	0.98	28	42	33	32	36	47½	67½	80	82½	82½
Flexol 3GH	tri-glycol di-hexoate	Carbide & Carbon	0.99	32	36	39	33	36	47½	65	82½	85	77½
di-butyl phthalate		Griffin Chemical	1.04	36	37	34	38	36	45	62½	82½	82½	80
di-hexyl adipate [e]		Binney & Smith	0.92	34	38	39	34	37	47½	67½	82½	85	77½
Plastoflex No. 3	di-butoxyethyl adipate	Advance Solvents	1.00	31	38	40	36	38	45	62½	85	87½	77½
tri-butyl citrate		Pfizer Chemical	1.04	37	39	41	36	39	45	70	82½	87½	77½
Plasticizer 3425	butyl cellosolve pelargonate	C. P. Hall Co.	0.90	32	44	38	38	40	55	72½	92½	90	82½
ISO X23	not disclosed	Industrial Solvents	0.95	36	43	44	36	41	50	67½	87½	90	82½
TP-95	di-butoxyethoxyethyl adipate	Thiokol Chem. Corp.	1.02	30	45	48	35	43	50	62½	87½	92½	80
di-benzyl ether		Eastman Kodak	1.05	34	46	46	38	43	52½	70	92½	92½	90
TP-90B	butyl carbitol formal	Thiokol Chem. Corp.	0.97	25	43	53	36	44	50	65	92½	92½	85
di-iso-butyl adipate		DuPont	0.95	30	50	45	39	45	55	67½	92½	92½	82½
ISO X14	not disclosed	Industrial Solvents	1.01	31	47	50	41	46	52½	70	90	92½	90
di-ethyl phthalate		Monsanto	1.12	40	47	51	44	47	57½	80	92½	92½	87½
Plasticizer 12	di-iso-butyl adipate	Godfrey L. Cabot	0.95	30	53	55	35	48	47½	65	95	92½	80
Circo light process oil	naphthenic hydrocarbons	Sun Oil Co.	0.92	49	46	48	52	49	47½	77½	92½	92½	92½
Califlux 510	unsaturated naphthenic hydrocarbons	Golden Bear Oil Co.	0.99	58	53	59	62	58	47½	75	92½	92½	92½
Plastogen	sulfonic acid and paraffin oil	R. T. Vanderbilt Co.	0.84	57	62	59	63	61	50	72½	92½	92½	85
Plastolein 9055	di-ethylene glycol di-pelargonate	Emery Industries	0.96	52	60	67	67	65	47½	77½	90	90	87½
Piccocizer 30	polymerized aromatic distillate	Harwick Standard	1.01	57	65	68	68	67	47½	80	92½	95	92½
Para Flux	saturated polymerized hydrocarbon	C. P. Hall Co.	1.03	68	69	69	74	71	45	85	95	95	92½

Notes: (a) Vulcanizates weather-aged at Mare Island, California, for two years. (b) Vulcanizates weather-aged at Bremerton, Washington, for two years. (c) Vulcanizates weather-aged at Point Barrow, Alaska, for two years. (d) Average value of weather-aged vulcanizates. (e) The manufacturer describes this material as di-hexyl adipate. Infra-red analysis shows this material to be principally di-butoxyethyl adipate mixed with adipates of lower molecular weight.

Discussion of Results

The results of the cold compression set and hardness tests before and after weather aging are given in Table III. The plasticizers are listed in the table in the order of decreasing effectiveness, as judged by the average of the compression set values obtained from tests on the weather-aged specimens. Most of the vulcanizates experienced an increase in cold compression set over their respective initial values as a result of weather aging. There was, however, a considerable number of vulcanizates which exhibited a slight decrease in compression set due to weather aging. In general, the latter vulcanizates were also the outstanding ones for low cold compression set after weather aging.

In the case of many vulcanizates, there was considerable difference between the respective compression sets of the specimens aged at the three locations. The extreme example was the vulcanizate containing Plasticizer 12. The specimens of this vulcanizate aged at Point Barrow had 35% set, whereas those aged at Mare Island and Bremerton had 53% and 55% set, respectively. It was shown in the previous survey of plasticizers in GR-S by this laboratory *(1)* that Plasticizer 12 is comparatively easily volatilized from a GR-S vulcanizate. Consequently, the higher cold compression sets of this vulcanizate aged respectively at Mare Island and at Bremerton were undoubtedly due to the greater losses of plasticizer caused, in turn, by the higher temperatures which existed at these locations.

Specimens of the vulcanizate plasticized with TP-90B also gave widely different cold compression sets depending on where they had been exposed to weather. The values were 36% for the specimen aged at Point Barrow, 43% for the specimen aged at Mare Island, and 53% for the specimen aged at Bremerton. These sets are in the same order as rainfall at these locations. The effect of rainfall on the cold compression set of this vulcanizate is not surprising, since the previous survey of plasticizers revealed that TP-90B was the most easily extracted by water of any of the plasticizers tested.

The data in Table III in conjunction with the information in Table I show that such relationships between weather (either temperature or rainfall, or both) on the one hand, and cold compression set on the other hand, also existed in the cases of vulcanizates plasticized respectively with FX 103, ISO X23, TP-95, di-benzyl ether, di-iso-butyl adipate, and ISO X14. These relationships emphasize the desirability of performing heat loss and water extraction tests on highly plasticized vulcanizates to be exposed to weather when in service. Vulcanizates which suffer considerable heat loss and/or water extraction are not suitable for such service.

The Rex hardnesses of most of the vulcanizates before

weather aging were in the range 45 to 50 at 82° F. and in the range 57½ to 67½ at −40° F. After aging, the better vulcanizates from the standpoint of cold compression set ranged in hardness from 72½ to 82½ at −40° F., the poorer had hardnesses around 92½. With few exceptions, the specimens aged at Point Barrow did not become as hard at −40° F. as did the corresponding specimens aged respectively at Mare Island and at Bremerton. This, of course, was the result of less loss of plasticizers by volatilization and water extraction at the former exposure station.

The surfaces of each specimen after weather aging were examined for deterioration. The exposed surfaces of many of the specimens were observed to be dull and decomposed to the degree that black powder rubbed off when the surfaces were stroked lightly with a piece of white paper. No change in the unexposed surfaces was noted. Under 15X magnification the exposed surfaces were observed to have the "alligator skin" appearance typical of weather crazing. The extent of powdering on the surface seemed to be roughly proportional to the severity of the crazing.

Specimens of the vulcanizates containing ester plasticizers, which were aged respectively at Mare Island and at Bremerton, exhibited surface deterioration to the greatest degree. This condition was barely, if at all, noticeable on corresponding specimens aged at Point Barrow, probably because of less sunlight and lower temperatures at this exposure station. Specimens of vulcanizates containing hydrocarbon plasticizers, and those containing the ether and ester plasticizers which were volatilized or water-extracted, showed less deterioration after weather aging than the vulcanizates containing the more permanent ester plasticizers.

Conclusion

In conclusion, the results of this investigation demonstrate the importance of testing GR-S vulcanizates containing considerable quantities of plasticizers for heat loss and water extraction if these vulcanizates are to be exposed to weather while in service.

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Reports on Avoidable Accidents in Rubber Plants

ADDITIONAL reports on avoidable accidents in rubber factories, as reported from time to time by the Rubber Section of the National Safety Council, follow herewith:

Tire Building: An employee who had been training as a heavy service tire builder was pulling a wire bead over a collapsed 11.00 x 20 tire building drum when he accidentally stepped on the floor switch which caused the drum to expand, catching his right little finger between the sections with resultant loss of the finger at the first joint.

In the training program for heavy service tire builders, it is explained that during two operations, all power must be shut off by means of the available switch at the side of the tire building machine base. One of these operations is the removal of the tire from the collapsed drum. The other operation involves putting a bead wire over the collapsed drum at the beginning of the tire building construction. Obviously, this worker failed to shut off the power as he had been instructed during his training period.

Mill Accident: An employee was adding grit to plastic material in an experimental batch on a small development laboratory mill. Employee stated that as he placed the batch in the bite, he sneezed and the involuntary movement caused his fingers to be caught in the stock, putting them into the bite of the mill. He hit the safety stop and jerked his hand free, stripping the flesh from the end of his middle finger of his right hand, and causing some injury to his index and ring fingers. The injury required the amputation of the distal phalanx of the middle finger of his right hand.

This laboratory mill was equipped with dynamic braking and rolls are 8 x 12 inches. The speed of the mill was 41.8 feet per minute. The stopping distance was 4 inches. Distance from the floor to the top of the roll was 39¾ inches. The mill was equipped with a single safety bar, 7½ inches above the top of the roll and over the bite. There was 1¾ inch movement in either direction to stop the mill. This accident serves to emphasize the value of the installation of a barrier safety cradle for laboratory mills.

Calender Train: A calender hand with seven years experience was killed immediately when pulled into the fabric at the compensator roll on a calender train. Apparently he had been attempting to cut a build-up of marker tape without shutting down the equipment as normally required.

The employee was in a crouching position and it was discovered that he could not have reached the safety cord at this location which had been installed to afford some protection but in this case could have been reached only by a man in a standing position. While this failure to properly position a safety cable was not the entire problem, the lesson in locating safety cords on such equipment should be remembered. It was agreed that enclosing this part of the train with interlocking screens was probably the best solution.

Calender Roll: A calender helper was attempting to brush a piece of excess stock off of the idler roll and in so doing caught his right hand, pulling him between the fabric and idler roll. The safety cable was immediately pulled by a coworker and the employee released by dropping the idler roll, but he was dead upon arrival at the plant hospital.

As a result of this accident, we should all check our mills, wind-ups, calenders, and any other machinery having revolving rolls and see that we have exhausted every effort to eliminate every hazard.

Editorials . . .

Approaching Deadline

AS the deadline date for submitting bids on the government-owned synthetic rubber producing facilities draws closer—May 27, to be exact—the picture becomes a little clearer and a few observations can be drawn. Since the Rubber Producing Facilities Disposal Commission has issued its first official statement, some definite facts are also available. Confusing statements still find their way into the daily press from time to time, but this is not too unexpected in view of the immensity of the job to be done and the political implications which can be injected. It may even be assumed that some of these erroneous reports are somewhat on the deliberate side.

In any event, the report from the Disposal Commission makes it quite clear that there is definite interest on the part of industry in the synthetic rubber facilities, with such interest stemming not only from the direct rubber manufacturing field but from chemical and petroleum concerns who are coming around to the realization that the rubber industry is big business. To be specific, the Disposal Commission reported that up to the middle of March it had received 274 requests for information and bidding instructions, including 196 requests for specific plant brochures. Further, up to mid-March the Commission had held more than 40 meetings with prospective purchasers. It is safe to assume that in the intervening period these numbers have increased.

Some columnists, particularly a few close to the Washington scene, have scoffed at these figures as representing "keen competition" among rubber manufacturers for the synthetic facilities, pointing out that many of the requests were based on idle curiosity rather than on specific interest. They also point out that to date not a single concrete bid has been received by the Commission. If a stipulated price is covered by a "concrete bid" the criticism is probably justified, since the Commission is believed to have received about 10 bids, complete except for price. These critics overlook the fact that such bids have been invited, in an effort to stimulate earlier action, since the Disposal Law gives the Commission a six-month period in which to negotiate actual prices for each property and arrange terms of payment.

There is a growing feeling in the industry that realistic bids will be in the hands of the Disposal Commision before May 27. The rubber manufacturing industry is well aware of the complexities in the Disposal Law, under which it would be relatively easy for a handful of legislators to deny the sale of any facilities to private industry and continue the government in full and complete control of the production and sale of both GR-S and Butyl rubber. Even though a small segment of the industry would welcome such continuance, by far and away most manufacturers prefer that the government relinquish the reins and enable synthetic rubber to stand up in free and open competition with the natural product. As the Walrus said, "the time has come."

One reason for the belief that realistic bids will be submitted to the Commission by the deadline date of May 27 is the political sniping which has already started in Congressional circles. Because of the dearth of "concrete bids" some Democratic leaders have attacked the over-all disposal plan and are again raising the cry of "give-away." They argue that the Disposal Commission will have to settle for figures far below the approximate $500,000,000 cost of the 27 facilities involved. In a sense, they have tipped their hand that they intend to dispute the sale of the plants to private industry unless "full, fair value" is obtained. The Commission, on the other hand, is convinced that such value will be secured, and the prospective purchasers are beginning to realize that "bargains" will be few. This realization will result in "realistic bids."

One of the major problems facing prospective purchasers is the balancing of short- and long-term views, and adjusting financial structures accordingly. There is no question in the minds of rubber economists that the future of synthetic rubber is assured, based on continued increases in the consumption of new rubber, without considerations of price and quality between the natural and synthetic materials. There is likewise no questioning the fact that for the next several years the use percentage ratio of natural and synthetic rubber will see-saw, based largely on price considerations alone. How to bring these two recognized factors into balance with respect to entering a price bid for one or more of the synthetic rubber facilities is the basic problem facing prospective purchasers.

To sum up, there is every likelihood that realistic bids will be in the hands of the Disposal Commission by May 27 and that satisfactory prices and terms will be worked out between the Commission and bidders in the period before year-end. Whether a package deal can be submitted to Congress by January 31, 1955, which will meet all the requirements of the Disposal Act, such as minimum annual production of GR-S or Butyl rubber, is problematical.

NEWS OF THE MONTH

DISPOSAL COMMISSION REPORTS 274 INQUIRIES; RFC CUTS GR-S PRODUCTION IN SECOND QUARTER

IN a report to President Eisenhower on March 16, the Rubber Producing Facilities Disposal Commission stated that 274 requests for information and bidding instructions, including 196 requests for plant brochures, had been received from rubber, chemical and petroleum companies, as well as other concerns interested in getting into the synthetic rubber field. The report states that while tentative proposals had been received and reviewed, there were no definite bids. The Commission further stated that it had already held 42 conferences with prospective purchasers. The members of the three-man Disposal Commission called on the President personally, and stated that the rubber industry was optimistic over the long-run prospect of increased demand acting to expand the market for synthetic rubber. Meanwhile, the Reconstruction Finance Corporation announced a further reduction of nearly 7,000 long tons in production of synthetic rubber for the second quarter of 1954, and also disclosed that sales in June, will be the lowest of any month since July, 1950. RFC revealed the cut by issuing revised figures showing a projected second-quarter output of 106,300 long tons of GR-S. It will be remembered that on February 24 of this year, the agency had estimated second-quarter production at 113,250 long tons.

In reporting to the President, the commissioners stated that they had inspected twenty-five of the twenty-seven plants now operated or maintained on a stand-by basis and found them "well maintained" and in good condition.

Under the disposal policy adopted last year, Congress will inspect the sale program to ascertain that competition is maintained in the industry and that contracts insure that the plants remain available for rubber production in any future defense emergency.

The chief apprehension in the government has been that private buyers might abandon production for economic reasons and divert the plants to other purposes. After Congress has inspected and approved the disposal program, sales will be permitted within the sixty days following March 31, 1955. Any unsold plants would be taken off the market for another year. The government hopes to get a 20% down payment on each plant, and probably will accept a ten-year mortgage on the balance.

Projected Synthetic Cuts

In announcing the projected cuts in synthetic rubber production for the second-quarter of 1954, Kenton R. Cravens, RFC Administrator, stated that approximately 35,400 long tons of GR-S would be produced in June. Mr. Cravens also stated that the purchase orders received from large consumers, who are required to place firm orders 90 days in advance of delivery, indicated RFC sales of GR-S for June would be in the order of 32,500 long tons. RFC's inventory of GR-S as of February 28, 1954, was 84,112 long tons.

The following table sets forth RFC's production and sales predictions for the second calendar quarter of 1954. These figures include the oil used in oil-extended rubbers, but exclude the carbon black used in carbon black masterbatches. The figures follow:

Month	*Production*	*Sales*
April	35,550	38,500
May	35,400	37,000
June	35,400	32,500

RFC expects to maintain its stocks at 85,000 tons or less on June 30, as it is required to do under a Budget Bureau directive, by keeping second quarter output 1,700 long tons under sales.

The agency is reported to have no intention of shutting down any of its 27 plants, despite the strain of operating all of them at well below capacity. The agency also expects to come pretty close to matching earlier forecasts of a 13% profit on this year's synthetic rubber sales.

Incidentally, it has been announced that President Eisenhower accepted the resignation of Mr. Cravens as RFC Administrator, as of March 31. Mr. Cravens has returned to his post with the Mercantile Trust Co. in St. Louis, Mo., from which he took leave last April to join RFC. Laurence B. Robbins, Deputy Administrator, is expected to head the agency in the closing days of its operations. RFC will cease to exist after June 30, 1954.

It is believed that the task of managing the synthetic rubber operations after June 30 will fall to the Rubber Producing Facilities Disposal Commission. Under this plan, personnel of the RFC Office of Synthetic Rubber will be shifted to the Disposal Commission to continue supervision of the plants. This will continue, it is believed, until the plants are sold.

In other actions during the past few weeks, the Disposal Commission gave added assurance to companies planning to buy the plants that the prices they bid will be kept from prying eyes or unintentional disclosure to competitors.

Guarding against the possibility of such leaks during the seven-month period set aside for negotiating plant sales, the Disposal Commission has lifted the requirement that prospective buyers submit four copies of their bids.

Instead, the Commission has agreed to accept only a single copy naming the price, along with four others complete as to all purchasing terms, except price. The copy with the price figure will be kept under seal, available only to the three commissioners and their aides.

The four remaining copies will be used by staff members in processing the proposals. The change, made at the request of companies considering purchase of the plants, is spelled out in a new amendment to the bidding instructions distributed by the Commission last November.

Shafer Scores "Faint Hearts"

Relative to bids for the synthetic plants, Representative Paul W. Shafer (Rep., Mich.), in a recent speech to the House, charged that a "few faint hearts" in the rubber industry are trying to buy the government synthetic rubber plants at a "giveaway price".

He pointed an accusing finger at "scare talk" from Akron, that the government's plants are a poor investment. He singled out a published statement by one company that it will enter bids on three of the government's plants, but hopes all three bids fail.

"This kind of talk", the Congressman

said, "should be labeled the whittling down strategy." Scare enough people into thinking that you can't operate these plants at a profit, or claim that they are obsolete, and perhaps you can cut your own bid down because you might scare out some other bidders who might have paid more.

"I want to serve notice right here and now that if anybody in private industry entertains the idea of buying one of these facilities at a giveaway price, they will get that facility only over my violent objection."

Mr. Shafer went on to say that: "I believe there are enough people in private industry in this nation who have confidence in the future of America to buy these plants at a fair price and the few faint hearts will just have to get along under the private enterprise system."

In commenting on the report of the Disposal Commission, William O'Neil, president of the General Tire & Rubber Co., said that it was an indication that the rubber industry has a solid front in its campaign to get the government out of private industry.

"Even the current low price of natural rubber hasn't dimmed the aggressiveness of the rubber industry's campaign to wrest its industry from the clutches of government control," the Akron industrialist said. "For the first time in 14 years our industry has an opportunity of becoming an unregimented private enterprise again.

"Both the seller and the buyer must be realistic about the problems involved," warned Mr. O'Neil. "For instance, the rubber industry is conscious of the fact that the ultimate buyers of the synthetic rubber plants might make less profit than the present operators receive in fees from the government. Synthetic rubber will have to stay relatively competitive with natural rubber regardless of profit, and today there is a 5c-per-pound differential in favor of natural rubber.

"There also must be a further realistic viewpoint on the value of the plants to the prospective buyers," Mr. O'Neil added. "In determining the sale price, part of the acquisition cost must be considered to be that expense which is immediately required for plant rehabilitation, for ordinary machinery replacement and maintenance. This is the expense that would have to be met by the government if it kept the plants." If kept clear of political sharpshooting, Mr. O'Neil sees a good chance for success of the disposal program.

Akron University Plan

It was also indicated during the past few weeks that there is a plan in the works to turn over to the University of Akron the synthetic rubber laboratories which it has operated for the government since 1944. The proposal calls for the laboratories to be sold to the University for a nominal sum, possibly $1, and that the government give the University $5,000,000 for its operation for three years. The $5,000,000 appropriation, it was suggested, could come from the sale of the synthetic rubber producing facilities. The money would enable the laboratories to supply research and development services for the Armed Forces. It would also permit the University to accept research contracts from industry on a fee basis.

The University's board of Trustees, which approved the plan, said the three-year period would allow them to find out if the laboratories can be operated without direct federal aid on income from fees. At the end of three years, the University would agree to one of these proposals:

(1) To continue the operation on the basis of fees from agencies of the Armed Forces and from private agencies.

(2) To continue under an additional appropriation by Congress through the National Science Foundation or other Federal agency.

(3) If such appropriation is not forthcoming, the title and property, plus any unused part of the original $5,000,000 appropriation, be returned to the government.

Also recommended is that a government agency screen and assign research projects of the Armed Forces during the three-year tryout, and supervise the annual operating budget for the military program as well as money spent for capital improvements.

News On Singapore Conference

Further details have become available on the conference on rubber quality which is scheduled to be held on April 22 in Singapore. A 16-man delegation from the United States will face producing, packing and shipping interests for the first time to exchange direct views at the supplier-consumer level on major problems of the rubber industry.

The meeting is said to be something of a milestone, and is the first of its kind in the 122-year history of the U. S. rubber manufacturing industry. The April 22 meeting will precede the meeting of the International Rubber Study Group at Colombo, Ceylon, and is expected to last about three days.

Importance attached to the conference by both consuming and producing interests is reflected in the tentative roster. In addition to delegates from the United States, there will be delegates from the Singapore Chamber of Commerce Rubber Association, the Rubber Trade Association of London, the Rubber Trade Association of Colombo, the Rubber Trade Association of Bangkok, the Rubber Trade Association of Saigon, the Rubber Trade Association of Indonesia, the Rubber Trade Association of Singapore, the Federation of Rubber Trade Associations of the Federation of Malaya, and the Malayan Rubber Export Registration Board.

The U. S. delegation will include the following: W. J. Sears (RMA), George M. Tisdale (U.S. Rubber), W. E. Cake (U.S. Rubber), Leonard Smith (U.S. Rubber), J. C. Roberts (Firestone), W. W. Scull (Goodrich), Dean Carson (Goodrich), W. E. Klippert (Goodyear), R. D. Young (Rubber Trade Association of New York), S. J. Pike, Jr. (S. J. Pike & Co.), Joseph C. Corwin (E. H. Simpson & Co.), H. H. Kuck, Jr. (Avia), F. T. Koyle (Loeb-Rhoades), Donald L. Kelley (Littlejohn), William Murray (M. Rothschild), and J. J. Meenan (Holland Colombo Trading Society).

The Singapore conference grew out of thirteen months of discussion over the merits of such a meeting. In January, 1953, the Rubber Manufacturers Association and the Rubber Trade Association of New York had made a joint proposal that such a meeting should be held in New York. Manufacturers and dealers took the position that only in the United States would it be possible for producers, packers and shippers to view the quality, packing and condition factors which are the basis of U. S. claims. Far Eastern groups countered with a proposal to hold the first meeting in Singapore.

Exploratory Discussions

Without in any way retreating from their belief that suppliers will have to view the rubber at U. S. dockside to fully appreciate the magnitude of the quality problem, the American groups saw an opportunity for opening exploratory discussions in connection with their presence in the Far East for the International Study Group Conference at Colombo beginning May 3, 1954.

RMA and RTA jointly sounded out the Singapore Chamber of Commerce Rubber Association on the idea of an exploratory meeting, as a stepping stone to a subsequent and full-scale conference at a later date in New York. The Far Eastern groups greeted this proposal enthusiastically.

It is the belief of RMA that the conference will make possible a free and direct exchange of ideas between consumer and

CLARIFICATION

In the news section of the February, 1954, issue of RUBBER AGE, there appeared a discussion of the brochures recently issued by the Reconstruction Finance Corporation describing some of the properties for the production of synthetic rubber which are to be offered for sale by the Rubber Producing Facilities Disposal Commission. One sentence in the discussion said: "Other interesting data presented in the brochure indicated that the United States is offering both the Firestone and Goodyear operated plants in Akron at a combined price of $15,708,000." The choice of wordage in this instance may have given rise to the impression that the sum mentioned constituted an asking price, when actually it was meant to convey a figure representing the government's cumulative gross investment in the plants. It is, of course, well known that the Disposal Commission is not offering any plant or plants for sale at a stipulated price. It has asked for proposals, however, and after May 27, 1954, negotiations on sales will begin.

supplier groups which would be helpful in engendering good will and understanding. Definite progress toward wider acceptance elsewhere in the world of RMA Packing Specifications is expected.

UN Rubber Study

The bearing of quality and packing upon the long range ability of natural rubber to meet synthetic rubber competition gets considerable attention in a newly-completed United Nations study of trade between East and West. The 145-page document was prepared by the Secretariats of the Economic Commission for Asia and the Far East, the Economic Commission of Europe, and the UN Food and Agriculture Organization.

The document concludes that the outlook for natural rubber production and trade is very uncertain. Faced with an excess of production capacity before World War II, a solution, although temporary, was found in regulating supplies. There was always the promise at that time that, as rising standards of living reflected themselves in increased automobile ownership and usage, and as new uses for rubber were found and expanded, capacity would ultimately cease to be in excess of requirements. This promise, the document states, is in the process of realization, but the advent of the synthetic product threatens to thwart its fulfillment as far as natural rubber is concerned.

The UN document also states that the extent of the adjustment of natural to synthetic rubber prices or, alternatively, the extent and area of displacement of natural rubber by synthetic rubber, is affected by the fact that the United States accounts for the great bulk of synthetic production. If, displacement having gone as far as is economically warranted (or legally permitted) in the United States, an export availability of synthetic rubber exists, its flow to Europe may be impeded by the dollar shortage. In this case, natural rubber, as other non-dollar commodities, might command a premium over synthetic rubber. In the long run, however, it might be expected that European countries would resuscitate or construct synthetic rubber industries, especially for those uses in which the synthetic product is preferred.

Malayan Board Cracking Down

A report from Singapore offers heartening evidence to U. S. consumers that the Malayan Rubber Export Registration Board intends to exercise the full "police" powers authorized in the new Packing Regulations. Imposition of fines totaling $20,800 on six alleged violators was recently disclosed. The largest fine, $5,000, was levied for alleged use of excessive talcum in packing bales of rubber.

The MRERB, which has been functioning for over a year, held a recent meeting at Penang on February 13. At that time new packing regulations were to have been considered. These regulations were to lay down the size of the bale and the weight of the talcum which can be used as well as where it can be used. On adoption, these regulations were to become the official standard of the Singapore Chamber of Commerce Rubber Association, effective September 1, 1954.

Vehicle Safety Campaign

According to the Inter-Industry Highway Safety Committee, national attention will again be focused on vehicle safety during the month of May. Special emphasis will be given to the condition of brakes, lights, tires and steering. The 1954 slogan will be: "Can You See, Steer, Stop Safely. . . . Check Your Car — Check Accidents," with the program receiving the full support of the automobile and tire companies, the National Automobile Dealers Association, and the National Association of Independent Tire Dealers.

Producing Vinyl Ethyl Ether

Production on a development scale of vinyl ethyl ether polymers has been announced by the New Product Engineering Department of the Bakelite Co., New York, N. Y. Production equipment is being installed to produce these polymers in commercial quantities. Pressure-sensitive adhesives based on vinyl ethyl ether polymers are characterized by their stability, lack of color, uniformity, and other desirable properties. Feeding tests conducted on laboratory animals indicate that toxicity should not present a problem because of its low order of magnitude, the company states. These polymers are being offered in two molecular weights. One polymer has a relatively low molecular weight and is an extremely viscous liquid at room temperature. The other polymer has a medium high molecular weight and is a rubber-like solid with a faint tack. These two polymers are compatible in all proportions allowing the formulator wide latitude in controlling adhesive and cohesive strength.

H. D. H. Vinyl Flooring

A new heavy duty homogeneous vinyl flooring series has been announced to distributors by the Goodyear Tire and Rubber Co., Akron, Ohio. The new line is called "H.D.H." and is a completely new vinyl line of decorator colors made in 1/8 and 3/32-inch gauges with colors all the way through to the back. Both gauges are available in either tile or roll goods. The H. D. H. series is an addition to the present Goodyear "Homogeneous Vinyl" flooring line and the .080 gauge line of 18 colors styled to the requirements of residential installations. Colors in the H. D. H. line have been keyed to current style demands of architects, designers and interior decorators and include Balboa Blue, Redwood Red, Ebony, Oxford Gray, Leaf Green, Briar Brown, Driftwood Beige and Palamino Tan. Goodyear's new vinyl flooring offers substantially lower maintenance costs on larger commercial installations because it is pre-polished—never needs waxing—and has a longer wear life.

HEWITT-ROBINS ANNOUNCES PLANS TO PURCHASE FREMONT RUBBER

Thomas Robins, Jr., president of Hewitt-Robins Inc., Stamford, Conn., announced recently that his company plans to acquire the business, plant and assets of the Fremont Rubber Co. of Fremont, Ohio, producer of foam rubber and other "non-tire" rubber products. A contract of sale has been signed by the two companies and the transfer was to have taken place on April 1. The purchase price has not been disclosed.

New foam rubber machinery and related equipment will be added to existing facilities within the next few months. When the expansion is completed, it will increase the present foam rubber capacity of Hewitt-Robins by about 30%. The additional capacity is needed to meet increasing demands from automobile, furniture, bedding and carpet manufacturers, Mr. Robins said.

The Fremont Rubber Co. was founded in 1945 by Robert P. Johnson, who will retire as chairman of the board when the sale is finally consummated. Fremont's sales have averaged $5,000,000 annually for several years. One of its major products is foam rubber. In addition, it has a substantial capacity for making "cellular blown" sponge rubber, a less expensive cushioning material which has wide consumer acceptance as a carpet underlay material and for floor mats and matting. The company also manufactures a diversified line of rubber and vinyl plastic floor tile.

The plant, located on a 40-acre plot approximately 30 miles southeast of Toledo, comprises 110,000 square feet of single-story buildings, all constructed within the last eight years. Employment at the present time is about 300.

The Fremont operation will become part of the Restfoam Division of Hewitt-Robins, which entered the foam rubber business in 1945 and is presently the fourth largest foam producer in the United States. Previous to 1945, Hewitt-Robins' business was concentrated almost entirely in heavy industry products such as conveyor belting, conveyor machinery, conveyor engineering, heavy-duty industrial hose, molded rubber products and machinery components made of rubber. The addition of foam rubber has brought about diversification and has contributed substantially to the company's growth. Plants are located in Buffalo and Staten Island, New York; Passaic, New Jersey; Philadelphia, Penna., and Johannesburg, South Africa.

Hager Joins Indoil Chemical

John J. Hager has joined the sales staff of the Indoil Chemical Co., Chicago, Ill. His headquarters will be in Akron and he will represent Indoil in Ohio and adjacent areas. Mr. Hager was previously manager of the Automotive Department of the Pioneer Latex and Chemical Co., prior to which he had been with the B. F. Goodrich Co. for some years. Robert E. Elliott, who has previously represented Indoil in this territory, has been assigned to special sales problems with headquarters in Chicago.

SPONGE RUBBER PRODUCTS CO. REVISES MANAGEMENT STRUCTURE

Frederick M. Daley, Sr., president, and William R. Todd, vice-president and treasurer of the Sponge Rubber Products Co., Shelton, Conn., have announced a basic revision in the management organization of the company. In a move to decentralize the expanding operations of its production and sales organizations, the company has adopted the divisional type of management and has created divisions for each major product with separate production and sales organizations along with a staff division. The company has been organized by divisions in the following manner:

The Sponge Division will produce in Plants A, B, C, and BF, industrial cellular rubber cord, tubing, strips, sheet stock, die-cut shapes and molded forms. This division will also make various items of "Spongex" plastic, including seine floats, flutter-boards, boat fenders, life rings, and ice buckets.

The Sponge Division will be managed by Wilbur S. Daley as general manager, with Donald F. Spongler as manager of Plant A, and Jack Montefalco as manager of Plants B, C, and BF. Jack K. Strobel has been named sales manager for items other than automotive, with W. R. Todd, Jr., as assistant sales manager. Carroll F. Daley has been appointed automotive sales manager.

The Foam and Hair Division will operate Plants D and F and produce the "Texfoam" pillow, and a line of molded furniture cushion units as well as "Texlite" rubberized curled hair for bedding and upholstery cushioning. Anselm Talalay is general manager of this division, and Leon Talalay is plant manager. John I. Gillis has been named sales manager with Walter M. Gute as assistant sales manager.

The products of the Carpet Division embrace floor coverings, both the new wool carpet the company is producing at Plant R at Fall River, Mass., and the sales of the company's line of "Spongex" carpet cushions. Ludolf M. Dewyk is general manager, and John K. Little is plant manager. Jack Dempsey has been named sales manager for this division.

The Switch Division will operate Plant H at Shelton, and will be run by John R. Shields, Jr., as general manager.

The Canadian Division at Waterville, Que., caters to Canada's requirements of industrial cellular rubber sheet stock and die-cut shapes, and Spongex carpet cushions. Frederick M. Daley, Jr., is general manager of this division.

The newly-organized Staff Division will serve the other new divisions. Earl D. Gunn has been named general manager of the Staff Division, with Kevin J. Kelley as personnel manager, Robert G. Nicol as purchasing agent, Samuel H. Herron, Jr., as traffic manager, and John J. Corrigan as advertising manager.

The company has also announced the re-election as president of Frederick M. Daley, Sr., for the thirty-second year. William R. Todd, Sr., was elected vice-president and, in addition, was re-named to the office of treasurer, a position he has held since the company was founded.

Talalay Shields Daley Dewyk Gunn

Corrigan Kelley Nicol Strobel Gillis

Retiring from the office of vice-president is R. A. Holbrook. Elected for the first time as secretary was James R. Todd who started with the firm in 1941. He became manager of the company's Texfoam Division located in Plant D in May of 1952, and will continue in this capacity. On February 27, 1953, he was elected to the board of directors of the company and is secretary of the Spongex Foundation.

Emery Opens Cleveland Office

After many years of servicing its northern Ohio accounts through Schibley and Ossmann, Inc., Emery Industries, Inc., of Cincinnati, Ohio, has announced the opening of a direct sales office and warehouse in Cleveland, Ohio, on April 1. According to R. F. Brown, Emery's chemical sales manager, this change has been brought about by the increased technical sales and service demanded by the rapid expansion of product lines, particularly into specialized, highly technical fields. William J. Siemens, Jr., who has been handling specialty products in the northern Ohio area, and William C. Sowers has been assigned to the new Cleveland office. They will be responsible for the sale and service on all Emery products, including fatty acids and derivatives, plasticizers, textile oils and emulsifiers. Because of Mr. Siemens' increased responsibility, the southwestern Pennsylvania and West Virginia portion of his previous territory will be added to that of James A. Funk, operating out of Cincinnati.

CORRECTION

Our attention has been called to a typographical error which appeared in the report on "Engineering Developments of Rubber" in the January, 1954, issue of RUBBER AGE. In referring to studies on the oil resistance of nitrile rubber vulcanizates, it was indicated that as the acrylonitrile content is increased the oil resistance decreases. As the original work stated, the oil resistance in such cases actually increases.

Goodyear Airfoam SL

A new synthetic elastomer foam called "Airfoam SL" which is said to be resistant to fire, and deterioration from sunlight, oil and grease and which will greatly extend the use and application of flexible foam products, has been introduced by the Research and Development Laboratories of the Goodyear Tire & Rubber Co. In making the announcement, Dr. R. P. Dinsmore, vice-president in charge of research and development at Goodyear, said it is a completely synthetic foam material, believed to be the first of its type produced in the United States. The synthetic rubber, "Chemigum SL," upon which the development of Airfoam SL is based, was announced a year ago by Goodyear.

Because the chemicals used in Airfoam SL are delicately balanced and are subject to accurate control, the texture of the new foam product can be varied from that of a silky fine to a rough, coarse material to cover a wide range of applications. In addition, the synthetic composition of Airfoam SL provides a product of higher compression with less weight than natural rubber latex foam and gives it inherently higher tensile strength with similar porosity of latex foam rubber. Compression of the new product also can be varied from very soft to very firm. The new synthetic foam can be easily fabricated much in the same manner as regular Airfoam. It can be produced in snowy white, or in any color, and is easily distinguished from latex foam rubber by its lustrous and sparkling appearance.

Because of its exceptional fire, oil and grease resistant qualities, many new and as yet unforeseen applications can be developed for Airfoam SL, the company states. It is suitable for cushioning in outdoor furniture because of the resistance to deterioration by sunlight and will be ideal for use in cushions and mattresses in airplanes and ships where light weight, non-inflammable materials are required. Other uses to which different degrees of texture and firmness in Airfoam SL can be adapted include mops, sponges, padding for clothes and foundation garments, etc.

M. W. KELLOGG AND U.S. ARMY DEVELOP NEW KEL-F ELASTOMER

A new and revolutionary synthetic rubber, a "Kel-F" fluorocarbon elastomer, which is said to have properties not found in other rubber products, has been developed as a result of several years of cooperative research by the Office of the Quartermaster General, Department of the Army, and the M. W. Kellogg Co., subsidiary of Pullman, Inc., according to a recent announcement.

The unique feature of this rubber is its unusual resistance to corrosive chemicals. It is resistant to strong acids such as fuming nitric and sulfuric acids, and is also unaffected by hydrocarbon fuels and lubricants, oxygen, ozone, and sunlight. No other rubber, natural or synthetic, currently exists which possesses this combination of desirable properties.

This type of rubber is non-flammable, tough, abrasion and heat resistant, and can be processed and vulcanized on conventional rubber equipment. The Kel-F elastomer is serviceable over the temperature range of —15° F. to 400° F., and has good electrical insulation properties. Applications envisioned for the elastomer include fuel hose, diaphragms, gaskets, seals, "O" rings, tank linings, and containers and coatings for protective clothing, boots, and gloves used in handling corrosive materials.

Dr. Juan C. Montermoso, Chief of Rubber Research, Office of the Quartermaster General, stated that this Kel-F elastomer may also be used for coating or treating paper, fabric, wood or metal in the conventional manner, either from a water emulsion or solvent system.

Warren L. Smith, president of M. W. Kellogg, has revealed that his company is constructing a pilot plant to produce several thousand pounds of the Kel-F elastomer monthly. The pilot plant is expected to be in production the last quarter of 1954. In making the announcement of the new plant, Mr. Smith said that while the new development will eventually have practical applications for civilian uses, all available material for some time will be utilized for military purposes. With the completion of the pilot plant, however, samples of Kel-F elastomer will be made available for evaluation by industry.

The Kel-F elastomer becomes a rubber-like addition to the already large family of fluorocarbon raw materials now manufactured at the Jersey City, N. J., plant of the Kellogg company.

Hycar Dry Rubber Chart

B. F. Goodrich Chemical Co., Cleveland, Ohio, has announced the availability of a new chart outlining the properties of Hycar dry rubbers. The rubber compounder will find this chart a handy and valuable reference to the complete line of Hycar nitrile rubbers. The company has also announced that the designation of Hycar 1012X41, a liquid nitrile polymer introduced last year, has been changed to Hycar 1312 as this product is now a standard production item.

Old Submarine Cable

In 1923, an eight-mile length of three-conductor, leadless submarine cable was laid from San Francisco across the bay to Brooks Island, and this cable has been in operation since that time. A 40% natural rubber compound with "Horse Head" zinc oxide, product of the New Jersey Zinc Co., as the principal loading was used for the insulation of all three conductors. During 1951, it was necessary to repair the original installation because of mechanical damage. At that time, the physical and electrical characteristics of the insulating compound were checked and found to be essentially the same as when the cable was installed nearly 30 years before.

Marlex 50 Polyethylene

Phillips Petroleum Co., Bartlesville, Okla., has developed an entirely new and superior type of polyethylene plastic, which can be produced by a unique process requiring a substantially lower investment than existing processes, according to a recent announcement. A semi-commercial plant to make this new plastic will be built at Adams Terminal on the Houston Ship Channel where the company is expanding its already large petrochemical manufacturing facilities. After a sampling of the plastic goods manufactured with production from this new unit, the company anticipates building a large plant.

The company stated that the new plastic greatly improves such products as film-type wrapping for vegetables and fruits, plastic tubing and coated paper. It also opens up entirely new uses for polyethylene, such as non-breakable baby bottles and other vessels which must be steam-sterilized. Because of the properties of this new plastic, trade-marked "Marlex 50," less of it is needed to make articles which are lighter yet stronger and tougher than if made from presently available polyethylene. Also it has much greater resistance to heat and to water vapor penetration. Of greatest interest is the much lower investment cost required.

This process operates at relatively low pressures of less than 500 pounds per square inch as contrasted with the extreme pressures of 15,000 to 30,000 pounds employed in present commercial polyethylene production, the firm stated. Marlex 50 polythylene, said the announcement, is the result of Phillips' extensive research which earlier brought out another member of this plastic family, Marlex 20, which has already created widespread interest in the trade because of the improvement in the final product when blended with other commercial polyethylenes.

An index to Volume 74 of RUBBER AGE will be found on Pages 147 to 150 of this issue.

FOUR TRADE ASSOCIATIONS PRESENT CODE FOR PLASTICS

A four-point "statement of principles by the plastics industry" was made public recently by officials of the four major trade associations of the industry. They said the statement was prepared by executives of individual companies and that all manufacturers and processors will be given an opportunity on a voluntary basis, to express adherence to the principles.

The statement of principles was considered desirable, said the officials, because of the phenomenal increase in the uses of plastic materials and the challenge to apply the materials for the best interests of the public. The statement is a promise to:

(1) Understand thoroughly the properties and limitations of all plastic materials handled.

(2) Apply the correct plastic materials to all industrial end uses, designing and engineering them for maximum value, performance and safety.

(3) Use great care to select the correct plastic materials for all consumer items, designing and engineering them to insure value, satisfaction, safety and pleasure to all users.

(4) Sell plastic materials, and all industrial and consumer items made therefrom, on the merits of the materials, applications and design, and free of extravagant, insupportable claims.

The statement was made public by William C. Foster, president of the Manufacturing Chemists' Association, Inc.; John J. O'Connell, president of the Society of the Plastics Industry, Inc.; John W. Labelle, president of the Society of Plastics Engineers, Inc., and S. Ernest Kulp, president of the Plastic Coatings and Film Association.

Davis Denied New Trial

A Federal Judge in Cleveland, Ohio, has turned down a request by Poncet Davis for a new income tax fraud trial. Mr. Davis was convicted recently on four counts of tax evasion. He drew a five year prison sentence on each count, the terms to run concurrently, and a total of $40,000 in fines. The judge ruled that trial evidence showed that Mr. Davis, president of the Robbins Tire & Rubber Co. of Tuscumbia, Ala., did divert $868,000 from funds of the company to his own use. Mr. Davis' attorneys sought a new trial on the grounds that before the money could be construed as Mr. Davis' income, the government needed to prove the firm had profits to distribute. It is expected that Mr. Davis, now free under $20,000 bond, will take the case to the U. S. Supreme Court if an appeal, already filed in the U. S. Sixth Circuit Court of Appeals in Cincinnati, Ohio, is not successful.

A new reversible window shade made of Krene by Weiss & Klau Co., New York, N. Y., has one side colored light and the other colored dark to harmonize with both interior and exterior decorations of opposing color schemes.

U.S. RUBBER PLANNING TO BID FOR TWO SYNTHETIC FACILITIES

In a recent statement in New York City, Harry E. Humphreys, chairman of the board of the U. S. Rubber Co., stated that he expects 1954 to be a good business year, only slightly below 1953. Mr. Humphreys declared that the company is not attempting to reduce its inventories at present, and announced that the firm expects to bid for at least two of the government-owned copolymer plants. The company expects, however, that there will be so many bids for the government-owned plants that some bidders may be disappointed.

The two copolymer plants for which U. S. Rubber is planning to make an offer would take care of its synthetic rubber needs and leave something over for sale to other consumers. Purchase of the two plants, if effected, will not necessitate any financing, Mr. Humphreys said.

The price of synthetic rubber, under private operation of the plants, cannot be less than the present price of 23c under government ownership, Mr. Humphreys said. The government price, he pointed out, does not take into account a return on its investment, depreciation and other costs which will influence the price under private ownership.

The drop in prices of natural rubber to levels under that of synthetic has resulted in increased use of natural rubber in tires, Mr. Humphreys said, to effect savings in tire production costs. He said that suggestions that have been made for providing support for natural rubber prices were not sound.

"The unsoundness of artificial supports was demonstrated under the Stevenson plan," Mr. Humphreys said. The rubber growing areas, he added, will be better off economically under free markets.

Future Growth of Rubber

The U. S. Rubber executive indicated that a growth of 30% in rubber consumption over the next 10 years would necessitate a new round of expansion in the synthetic rubber plants. There should be adequate capacity in the GR-S plants until 1960, but new butadiene capacity will be needed by 1957 or 1958, he said.

Last fall, U. S. Rubber curtailed its production and reduced its inventories for a time. But at present, standard rates of turnover of inventories are being maintained and there is no need for further cuts in stocks of materials or finished goods, Mr. Humphreys said.

Sales of tires in the United States for replacement during January were running at the rate of 50,000,000 units a year, fully up to or better than the estimates made at the beginning of 1954. He indicated that the total for this year should run between 47,000,000 and 49,000,000, compared with 45,700,000 in 1953.

Tires are 30% more durable than they were five years ago, owing to the introduction of the cold rubber process, and this is somewhat retarding the rate of replacement, Mr. Humphreys said.

Automobile producers are confident that sales of cars this year will be at a high level, and U. S. Rubber is making its plans for original equipment tires, in the expectation that car sales will total 5,200,000 units. Early introduction of some 1955 model cars will help sustain auto output this year.

U. S. Rubber is spending more money for research this year than last year, Mr. Humphreys said. Ending of the excess profits tax has not dictated any change in the way in which the company was administering its costs, he said. Investments in new plants and equipment this year will be fully up to the $26,000,000 spent in 1953, he added.

Discussing the labor outlook, Mr. Humphreys said he did not think the guaranteed annual wage demands of unions could be supported. He said he hoped industry would be able to hold the line at present wage levels.

PROMOTION OF MOTTINGER AND ESTES ANNOUNCED BY HEWITT-ROBINS

C. W. Mottinger

R. C. Estes

Claude W. Mottinger, formerly purchasing agent for the Rubber Division of Hewitt-Robins Inc., at Buffalo, N. Y., has been appointed to the newly-created position of director of purchases for the company and will be responsible for the over-all purchasing policies of the company. Succeeding Mr. Mottinger as purchasing agent for the Rubber Division is Robert C. Estes, who joined the company in 1937 and who has been assistant purchasing agent since 1950. A native of Akron, Ohio, and a graduate of the University of Akron, Mr. Mottinger has been associated with Hewitt-Robins since 1951. Previous to that time he was in the Purchasing Department of the U. S. Rubber Co. He is a member of the Purchasing Agents Association of Buffalo and the Buffalo Rubber Group. In June of this year he will move to the company's executive offices in Stamford, Conn. Mr. Estes, a native of New York State, attended Syracuse University and the University of Buffalo, graduating from the latter with a B.S. degree. His headquarters are in Buffalo.

Maryland Cork Moves Offices

Maryland Cork Co., Inc., producers of granulated cork for use in the rubber and other industries, generally processed to specification, has moved its headquarters to the Baltimore Life Building, Charles and Saratoga Streets, Baltimore 1, Maryland. The phone number remains as Plaza 0764.

Pennsylvania Range Boiler Company's automatic gas-fired hot water heaters are now equipped with cold water dip tubes made from rigid Geon vinyl plastic that help eliminate internal rust and corrosion.

Susquehanna and H & B Merge

A creditors' committee of Susquehanna Mills, Inc. of Sunbury, Penna., has approved the merger of the company into the H & B American Machine Co. of Chicago, Ill., with the consolidation taking effect March 31. Stockholders of the two companies had previously approved the plan at two separate meetings. The merged corporation will be known as the H & B American Machine Co., Inc. It was previously indicated that the General Tire & Rubber Co. had considered making an offer for Susquehanna Mills, but upon creditors' approval of the merger with H & B, the plan fell through. General Tire's interest in Susquehanna was said to stem from its recent acquisition of the Bolta and Textileather companies. Susquehanna Mills produces specialty yarns and weaves plastic seat covers out of a type of thread manufactured by Bolta.

Ziegler Named Sales Manager

Henry B. Ziegler, formerly associated with E. F. Drew & Co., has been appointed sales manager of the Wilson-Martin Division of Wilson & Co., Inc., Philadelphia, Penna. An honor graduate of Columbia University in chemical engineering, Mr. Ziegler was previously sales manager of the Durite Division of the Borden Co. He also was district manager on synthetic resins for the Barrett Division of the Allied Chemical & Dye Corp. Before that, he was research chemist and chemical engineer for Spencer Kellogg and Sons.

MICHIGAN SUPERINTENDENTS HEAR BENDER TALK ON PLASTIC PIPING

B. W. Bender, manager of plastics sales for the Chicago Die Mold Division of the U. S. Rubber Co. at Chicago, Ill., delivered an interesting talk on "Plastics Piping" at a dinner meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association held on February 18 at the Hotel Harris in Kalamazoo, Mich. In his address, Mr. Bender observed that, in its proper field of application, plastic piping is superior to and more economical than metal pipe.

In commenting on the principal types and uses of plastic pipes, Mr. Bender gave attention to polyethylene, butyrate or Tenite, Saran, polyvinyl chloride, fiberglass-reinforced polyester, and styrene acrylonitrile copolymer blends (Uscolite). He said that roughly 70% of the plastic pipe sold is polyethylene; that butyrate currently ranks second to polyethylene in usage in plastic pipe; that Saran is the oldest plastic pipe and was the first to gain acceptance in the handling of corrosive chemicals; that the so-called rigid vinyl pipe is the latest addition to the plastics pipe family; that polyester fiberglass pipe was developed largely under Navy development contracts during World War II; and that Uscolite pipe was introduced commercially in 1948.

According to Mr. Bender, Uscolite pipe will handle any chemical used in paper mills (to the best of his knowledge) provided pressures and temperatures are not too high. Depending on pipe sizes, Uscolite pipe, he said, is not intended to handle solutions above 170° F. nor pressures above 100-150 psi.

Mr. Bender said that the best-known applications of Uscolite pipe cover the handling of air, alum, bleaches, brines, chlorine dioxide bleach, chlorine gas and water, demineralized water for boiler feed and electrical grade papers, filler dispersion, piping through bleach room (external corrosion), soluble sizing (glue-starch) and wet strength resin solutions.

Polyethylene pipe, Mr. Bender commented, is most economical for low pressure, low temperature water. It also has been reported, he added, that polyethylene pipe has been used successfully in piping stock from the stock chest to the header box of the Fourdrinier.

Mr. Bender further touched upon plastic pipe sizes, fittings, and installation procedures. He suggested that plastic pipe needs better support than iron pipe; that strap wrenches are preferred to pipe wrenches for plastic pipe; and that plastic pipe should be free to expand and contract.

In the opinion of Mr. Bender, plastic pipe, properly selected, may outlive metal pipe manyfold—also, can eliminate contamination problems, and can save maintenance costs. A very lively question period followed the formal presentation of the talk by Mr. Bender.

Emil Hervey Designs, New York, N. Y., is producing a handy new case to protect neckties while traveling. The cases have a transparent cover of Bakelite cast vinyl film.

Inert Atmosphere Chamber

A versatile inert atmosphere chamber with an associated purifying system has been constructed at the National Bureau of Standards, where it is said to be proving very useful in the Bureau's program of research in electrodeposition. The chamber permits all the common chemical manipulations such as filtration, distillation, transfer, and weighing to be carried out without contamination of reactants or products with oxygen, water vapor, or carbon dioxide. Experience with the NBS inert atmosphere chamber over the past two years indicates that it should meet the requirements of most groups that are working with atmosphere sensitive chemicals on a laboratory scale.

Passenger Belt Line News

According to authorities of New York City's transit system, a rubber belt shuttle subway will be built between the Times Square and Grand Central Stations starting about the middle of June. The Goodyear Tire & Rubber Co. and the Stephens-Adamson Manufacturing Co. will have plans and specifications completed by that time, city officials stated. Cost of the belt line is estimated at $3,800,000, or about $1,250 for each of the 3,000 feet of the line which will replace the present four-track subway shuttle. It was also announced recently that what is said to be the world's first commercial moving sidewalk will soon be in operation between the stations of the Erie Railroad and the Hudson and Manhattan Railroad in Jersey City, N. J. It will be capable of handling 10,400 passengers an hour through the inter-station tunnel. The 227-foot conveyor, also being built by Goodyear and Stephens-Adamson, is called a "Speedwalk". General Electric Co. engineers, working in conjunction with Goodyear and Stephens-Adamson, developed the electrical system for the unique application. The equipment includes a fan-cooled motor, a combination reversing starter (fusible type), and a thrustor brake. The new conveyor will utilize a 6-ply rubber and fabric conveyor belt, 5½ feet wide and ⅝-inch thick. It will be driven at a speed of 1½ mph. For 127 feet of its length, the Speedwalk will carry passengers on a 10% grade.

Goodrich Ruling Made Final

The Federal Trade Commission has made final an FTC hearing examiner's decision dismissing charges against the B. F. Goodrich Co. of alleged price discrimination in rubber and canvas footwear sales. The hearing examiner previously ruled on December 24, 1953, that the Goodrich discounts to customers were justified by cost savings, thus ending a 16-year FTC battle with victory for Goodrich.

DUPONT ANNOUNCES REDUCTION IN POLYISOCYANATE ROYALTIES

A 50% reduction in the royalty rate on the use of polyisocyanates in elastomer-based adhesives was announced on March 5 by the Rubber Chemicals Division of E. I. du Pont de Nemours & Co., Inc. The new rate of 75c per pound of polyisocyanate contained in the licensed adhesives will mean substantial savings for the 60-odd firms now operating under DuPont patents. The former rate of $1.50 was covered by agreements which still have 11 years to run.

Back of the royalty slash was a desire to encourage broader use of the versatile cements, the company stated. A lower royalty rate, together with recent price reductions on the polyisocyanates themselves, makes it possible to extend their application to numerous fields where adhesives of this type are desirable, but where cost has been a deterrent.

The adhesives, which are used chiefly for cementing fabrics to natural rubber and the various synthetic elastomers, stem from the same broad fundamental research program of the 1930's that produced nylon and neoprene. In the course of these high polymer investigations, DuPont researchers found that the polyisocyanates—a family of chemicals in which nitrogen, carbon and oxygen are combined in highly reactive groups—could be used as building blocks for cross-linking and chain-extending the molecules of other compounds in an almost limitless variety of combinations.

Among the many basic patents resulting from these early researches were the ones on adhesives. DuPont chemists discovered that the cross-linking ability of the polyisocyanates provided a means for joining certain materials by uniting molecules of the opposing surfaces. The chemical bond thus obtained is far superior to the so-called "mechanical" bond of ordinary adhesives, and proved especially suited to the problem of cementing nylon and other man-made fibers to elastomeric materials.

Today, the cements are widely used in a variety of rubber-fabric products such as hose, belting, diaphragms, and special types of tires. They have also been found ideal for bonding rubber to metal, and are currently being investigated for automotive motor mounts, shock absorbers, shear couplings, corrosion resistant tank linings, and rubber printing rolls bonded to metal cores.

Palmer Retirement Announced

Dwight R. G. Palmer, chairman of the board and chief executive officer of the General Cable Corp., New York, N. Y., retired from the company as of April 14. Mr. Palmer has been named New Jersey Highway Commissioner, this appointment pending the approval of the New Jersey State Senate. Mr. Palmer is a former treasurer of the National Democratic Committee and has long been active in affairs of the Democratic party. Mr. Palmer has been succeeded as board chairman at General Cable by Irving T. Bennett, who has been chairman of the Executive Committee.

PORTLAND CITES ITS ADVANTAGES IN HANDLING OF NATURAL RUBBER

The Port of Portland Bureau of the Greater Portland Chamber of Commerce, Portland, Maine, is of the opinion that certain salient facts relative to the handling of natural rubber at the Portland Port have not fully been drawn to the attention of the industry. To that end, the Port of Portland Bureau has prepared a report summarizing some of the Port's advantages. Briefly, these are:

(1) Free Time and Demurrage—Based on continuous experience of eight months from September, 1952, through April, 1953, it was found that about 230,000 packages, or 3,000 tons per month, of natural rubber from various Far Eastern origins were discharged at Portland, for movement inland, and that no demurrage charges were assessed on any of these imports. The same expeditious handling of rubber at Portland could be accomplished on at least 10,000 tons per month, the Bureau states.

(2) Inspection—Portland is said to offer ideal accommodations in this respect. The rubber is discharged on to wide pier aprons where sorting by proper marks can be accomplished under natural daylight. Packages are then placed on pallets when possible and tiered about two high inside the pier—easily accessible for satisfactory opening, sampling and closing operations preparatory to movement inland.

The piers are large, some being 125 feet wide up to 1,000 feet in length, where 14 cars draw alongside the pier doors for simultaneous loading. All are clean, well-aired and thoroughly protected from the elements. Conditions here permit inspectors to accomplish in one working day what would possibly take four days to a week elsewhere, the Bureau states.

(3) Weighing, Loading, Labor, etc.—The most modern equipment is said to be available with well-experienced cargo handlers. Domestic labor at reasonable rates is plentiful at all times. Union troubles and strikes are practically unheard of unless they emanate from other ports. Most of the past sampling and weighing has been performed by firms having representatives in Boston, but the Bureau has been assured by other recognized weighing firms that they would welcome the opportunity of establishing offices and facilities in Portland, should their services be required. Bulk railroad car weighing with modern certified scales and equipment is provided at a very nominal cost. The fee includes weighing of cars "light" just prior to the loading of the rubber, thus assuring accurate weights.

(4) Rail Movements to the Interior—Portland, Maine, is serviced directly by the Grand Trunk Railway, the Maine Central and the Boston & Maine Railroads with connections to all points in the United States and Canada. For rubber destined to far inland points West, or Southwest of New York, at least a full day in transit is gained by discharge at Portland. All shipments to the C. F. A. territory enjoy a three cents per hundred pounds advantage over New York and Boston, the Bureau declares.

(5) In-Transit Storage—There is available water-front warehouse space to accommodate more than 5,000 tons of natural rubber at very attractive storage rates. Rubber can be delivered from steamer and placed in storage without incurring an approximate 25c per hundred pounds truck delivery.

(6) Shipping—All rubber-carrying steamship companies will gladly call at Portland, Maine, to discharge. Their experience with the berthing facilities, the ice-free harbor, the services, the full cooperation of the Port Authorities are well appreciated by all Masters and their companies, the Bureau opines. Efficient discharging facilities permit no loss in time and a substantial saving in port charges.

GOODYEAR CHEMICAL DIVISION ANNOUNCES THREE MANAGEMENT CHANGES

R. E. Workman

C. O. McNeer

M. J. Rhoad

The Chemical Division of the Goodyear Tire & Rubber Co. has announced three important changes involving management personnel. R. E. Workman has been named assistant to the general manager; C. O. McNeer has been made general sales manager; and M. J. Rhoad has been promoted to assistant to the general sales manager. In his new assignment, Mr. Workman will assist in the coordination of the research, development, production and sales phases of the chemical operation. Mr. McNeer will be in charge of all phases of selling chemical materials, principally to the rubber, plastics, paint, textile and paper industries.

With 10 years' experience in chemical research, sales and commercial development, Mr. Workman is widely-known in the plastics and paint industries. He is a member of the American Chemical Society, the Society of Plastics Engineers and the American Institute of Chemical Engineers. Mr. McNeer has had considerable experience in chemical selling in the Southern and Mid-Western States and has for the past three years been in charge of all district sales. Mr. Rhoad, an experienced rubber technologist, has spent several years in sales technical service work. He is a member of numerous technical associations.

Textron Buys MB Manufacturing

Textron, Inc., has announced plans for a further expansion into the non-textile field with the acquisition of the MB Manufacturing Co., New Haven, Conn., manufacturers of aircraft, automotive and industrial mountings. Royal Little, chairman of Textron, described the acquisition of MB as a hedge against a possible "tough general textile depression." MB's gross sales last year were $8,000,000. Mr. Little emphasized that the acquisition of the company was on a cash, rather than a stock exchange basis, but declined to state the amount involved. He said that R. Mittler, president, and G. H. Mittler, treasurer, would continue to direct MB operations, which would continue largely autonomous.

Sty-Fil Transparent Cement

A new advanced transparent cement that has the unique ability to "fill in" irregularities and ruptured areas while sealing joints has been developed by Adhesive Products Corp., New York, N. Y. The product is called "Sty-Fil," an adhesive that is just as effective for bonding properties on both even and uneven surfaces, the company declared. Recommended for water-proofing joints, Sty-Fil may be put to excellent use in the manufacture of such items as toy water pistols and boats. Its fast action on surfaces of polystyrene plastic molded parts make it a "must" in the toy and novelty industries, the firm declares. Sty-Fil may be applied by conventional brush methods or by the use of a felt pad saturated with the cement.

Sharples Emulsifier Intermediate

Sharples Chemicals, Inc., Philadelphia, Penna., has announced the commercial availability of isopropylaminoethanols (IPAE), said to be an efficient emulsifier intermediate. Its oleate soaps exhibit high emulsifying and dispersing power at low concentrations. The company states that it is convenient to use because of its mild odor, high flash point (155° F.) and low toxicity. It is effective at an IPAE:oleic acid mole ratio as low as 1:1. Straw-colored, it has an average molecular weight of 116 and a boiling range of 110-265° C. With a freezing point of —50° C. and a mild amine odor, it comes 7.5 pounds to the gallon.

LITCHFIELD CALLS FOR EXPANSION IN SYNTHETIC RUBBER PRODUCTION

Production capacity of the synthetic rubber industry must soon be expanded to meet increasing world consumption of rubber, P. W. Litchfield, board chairman of the Goodyear Tire & Rubber Co., Akron, Ohio, told a Canadian audience recently. Speaking before the Empire Club of Toronto, Mr. Litchfield said that current raw rubber consumption is already at a rate exceeding today's tree rubber capacity and that plantations will be unable to expand sufficiently in time to supply world requirements within a few years.

"Today, world production of natural rubber is estimated at 1,700,000 long tons per year," Mr. Litchfield pointed out. "But, and this is more important, world consumption of new rubber in 1953 was at a rate some 600,000 tons in excess of the total supply of natural rubber. The difference in supply and requirements—in other words, the margin which has enabled our post war economic progress in North America—is made up by the synthetic rubber industry."

World consumption of rubber will have increased by 1958 to 1,000,000 tons in excess of what may be produced from existing rubber tree plantings, he estimated, and only two years hence the demand for new rubber will just about equal the maximum output of both plantations and existing synthetic facilities.

Calls for Plant Expansion

"If we are to avoid severe restraints upon our expected economic expansion, we will soon be required to begin a substantial expansion of our synthetic rubber plant capacity," said Mr. Litchfield.

Looking to the immediate and long-range future of the rubber industry, Mr. Litchfield said that while the 1954 outlook is for fewer original equipment tires, the market for renewal tires will probably be higher than in 1953. Another favorable factor, he pointed out, is the growing market for rubber products other than tires.

"The use of foam rubber is growing by leaps and bounds. We have branched out into plastics and chemicals. Research is going ahead full blast. New products are coming along, and greater values are in store for the consuming public. It is a bright picture indeed and the benefits will be realized on both sides of the border."

The veteran rubber executive referred to the pending transfer of American synthetic plants from government to private ownership. "The United States Government really wants to get out of this business and, even though we realize we are in for a hectic period of transition, the rubber industry welcomes this opportunity to take over.

"We on our side of the border are trying to get away from 'big' government and restore more power and responsibility to the individual. In the long run—and particularly in view of the steadily increasing demands for this commodity—we believe our synthetic rubber business will do a better job in private hands."

The rubber industry in Canada, he said, has a record of outstanding achievement, and the outlook for the future is bright. "No basic industry in this community can boast of a more consistent record of technological progress, nor to a more consistent record of passing along to the public the fruits of this progress."

Consumers, he said, today get ten times more mileage, with one-third less dollar cost than 40 years ago when Goodyear first started to produce tires in Canada. Workers have received similar benefits in shorter hours, higher pay and increased welfare benefits.

He summed up the industry's record with the statement, "I know of no industry where there is keener competition, or a better record of real service to the public."

Citing the threat of Communist aggression, he said the United States and Canada must face the common danger as one in mutual defense. "It may well be that the combination of jet and atomic power will, through the magnitude of their destructive potentiality, lead us to peace rather than to doom. But meanwhile, let our two free nations join hands more firmly than ever before in defense—not only of our own richly blessed lands, but in defense of the whole living structure of civilization."

U. S. Rubber Promotes Johnson

U. S. Rubber Co. has announced that Woodrow D. Johnson has been promoted to general sales manager of all Textile Division products. He formerly held the position of merchandise manager. Mr. Johnson joined the company in October, 1952, as merchandise manager of consumer fabrics. In January, 1953 he was named merchandise manager for all Textile Division products, except the sale of yarns to the knitting and tufting trades. Prior to joining U. S. Rubber, Mr. Johnson was with Deering Milliken and Co. as sales and merchandise manager of men's wear blends for the midwest area. Mr. Johnson was associated with Parker, Wilder and Co. from 1935 to 1942 in various sales positions covering the New York apparel market. From 1945 to 1949 he was midwestern sales manager in men's, women's and children's wear in Chicago. Mr. Johnson was in the Army from 1942 to 1945.

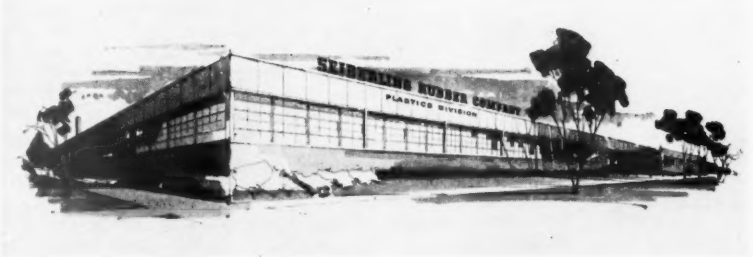
URW Policy Committee Meets

The International Policy Committee of the United Rubber Workers, C.I.O., held its annual meeting on March 12 and 13 in Cleveland, Ohio, and approved an economic program aimed at winning pay increases and strengthened welfare and security benefits for rubber workers. The union did not pin down the wage goal to a specific amount and no date for the opening of negotiations with the industry has yet been announced. The talks are expected to begin with one of the major companies in early summer. The committee also approved a resolution urging Congress to raise personal income tax exemptions from the present $600 to $1,000; to raise the minimum wage from 75c to $1.25 an hour; to liberalize social security and unemployment compensation, and to provide legislation broadening voluntary health programs. The URW economic program also calls for: (1) Signing of the remaining companies to the improved pension and hospitalization programs negotiated with major producers last year; (2) Retaining, or putting in where necessary, adequate wage reopening provisions with the right to terminate contracts where agreement is not reached on the wage question; (3) Continued pushing for correction of "inter" and "intra"-plant wage inequities, (4) A meeting of the Canadian Section of the International Policy Committee to draft an economic program to guide locals in that country. Leland S. Buckmaster, president of the URW, in his opening address, stated that the rubber industry can take a 20% drop in sales and still show net profits equal to 1953 because of the end of the excess profits and other taxes.

Building Polyethylene Plant

Visking Corp., Chicago, Ill., has announced plans to build a new polyethylene film extrusion plant near Flemington, N. J. J. Paul Smith, president, said the company has acquired a 20-acre site, and construction will be started shortly. Acquisition of the site and construction of the plant will represent an investment of approximately $1,000,000, he added. Initially the plant will employ 60 to 80 workers. Visking employs about 250 employees in its other two plants.

SEIBERLING RUBBER RIGID PLASTICS PLANT TO BE IN PRODUCTION SOON



Shown above is an artists's conception of the new rigid plastics plant being constructed by the Seiberling Rubber Co. at Newcomerstown, Ohio. An initial output of 1,500,000 pounds of rigid plastics a year is expected to start flowing from this plant by mid-summer. The modern one-story plant, about 65 miles south of Akron, will feature the latest type equipment developed for the plastics industry.

NSC RUBBER SECTION ANNOUNCES 1953 SAFETY CONTEST WINNERS

The National Safety Council, Chicago, Ill., has announced the winners in the Rubber Section Safety Contest for 1953. NSC stated that 151 contestants completed the contest, with 19 of these showing perfect records at the end of 12 months. A total of 400,127,000 man-hours were worked by competing companies and there were a total of 1,806 injuries. This represented a 10% decrease in injuries compared with 1952 and a 12% decrease in the final accident rate compared with 1952.

As usual, the contest is divided into five categories based upon total man-hours worked. In Division I, for example, representing over 400,000 average monthly man-hours, the yearly average accident frequency rate was 2.77. The Mishawaka, Ind., plant of the U. S. Rubber Co. took top honors in this division with a score of .37. Firestone's Akron Plant No. 1 was second with a score of .57, while Firestone's Memphis, Tenn., plant was third with a score of .58.

In Division II, representing 200,001 to 400,000 average monthly man-hours, the Oaks, Penna., plant of the B. F. Goodrich Co. took first place with a score of .00. The Des Moines, Iowa, plant of the Firestone company took second place with .29, and the St. Jerome, Que., plant of the Dominion Rubber Co. took third place with .42. The average accident rate for Division II was 4.67.

The Goodyear Tire & Rubber Co. of South Africa took first place in Division III, 100,001 to 200,000 average monthly man-hours, with a score of .52. Second place went to the Milan, Tenn., plant of the U. S. Rubber Co. with a score of .73, and the Goodyear Tire & Rubber Co. of Sweden took third place with .73. The average accident frequency rate for 1953 in this division was 7.39.

Division IV, 50,001 to 100,000 average monthly man-hours, showed seven companies with a perfect score. The average accident frequency rate in this division was 10.88. Companies with a perfect score included U. S. Rubber's Naugatuck, Conn., plant, the Cadillac, Mich., plant of Goodrich, Kentucky Synthetic Rubber Corp., Louisville, Ky., Tile-Tex Div., Flintkote Co., Chicago Heights, Ill., Vulcanized Rubber & Plastics Co., Morrisville, Penn., Firestone Tire & Rubber Co., New Castle, Ind., and Goodyear Tire & Rubber Co., Ltd., Centre 5, Que.

Division V showed an average accident frequency rate of 12.10, and 11 companies had a perfect score, including: U. S. Rubber Co., General Laboratories, Passaic, N. J., McCreary Tire & Rubber Co., Indiana, Penna., B. F. Goodrich Co., Research Center, Brecksville, Ohio, Firestone Tire & Rubber Co., Christchurch, New Zealand, Xylos Rubber Co., Los Angeles, Calif., University of Akron, Akron, Ohio, B. F. Goodrich Co., Du Bois, Penna., U. S. Rubber Reclaiming Co., Cheektowaga, N. Y., U. S. Rubber Co., Burlington, N. C., Firestone Tire & Rubber Co., Retread Shop, Akron, Ohio, and the Fabric Fire Hose Co., Sandy Hook, Conn. Division V is for plants working less than 50,000 man-hours monthly.

LAWSON, BJORK AND CRAMER APPOINTED VICE-PRESIDENTS BY SHARPLES

G. R. Lawson

H. F. Bjork

H. I. Cramer

Sharples Chemicals Inc., Philadelphia, Penna., has announced the appointment of George R. Lawson as vice-president in charge of sales; Howard F. Bjork as vice-president in charge of manufacturing, and Howard I. Cramer as vice-president in charge of development. Two of the new officers are well-known in the rubber industry. Dr. Cramer has been with Sharples for thirteen years and is a graduate of the Universities of Akron and Wisconsin. Prior to coming to Sharples he was professor of rubber chemistry at the University of Akron and a research chemist for the Goodyear Tire & Rubber Co. He is a past chairman and past secretary of the Division of Rubber Chemistry, A.C.S., and a member of the American Institute of Chemical Engineers, the Industrial Research Institute and the Institution of the Rubber Industry of Great Britain. Mr. Lawson has been a member of the Sharples Sales Department since 1946. He has been general sales manager since 1951. Mr. Lawson has been actively associated with the rubber industry since his graduation from Yale University in 1927. He has been associated with the Hood Rubber Co., the Merrimac Hat Corp., and the Barrett Division of the Allied Chemical & Dye Corp. He is a member of the American Chemical Society and the Chemists Club of New York as well as the Yale Club.

Ball Modernizing Management

Ball Brothers Co., Muncie, Ind., has announced virtual completion of initial phases of a continuing program to modernize management, manufacturing and sales and the shifting of operating responsibilities from Duncan C. Menzies, executive vice-president and general manager, to the managers he has assembled for the company within the last four years. E. F. Ball, president of the concern, said that the company has acceded to Mr. Menzies' desire to be relieved of the duties he has been performing since 1950 as Ball's chief operating executive. He has agreed to serve as vice-chairman of the company's Executive Committee and, as an important stockholder in the company, will also continue to serve as a member of the board of directors. The position which Mr. Menzies vacated will not be filled immediately, the company stated.

Federal Latex Expansion Program

According to a recent announcement, the expansion program of the Federal Latex Corp., Brooklyn, N. Y., is expected to be completed by late Spring of this year. Installation of new compounding and storage tanks will more than triple present production capacity. Arrangements are already being made for corresponding increases in quality control and research facilities. The company manufactures natural and synthetic compounds for latex foam, dipping, casting, laminating, coating, and impregnating.

Licensing Arrangement Announced

George C. Miller, president of the Bakelite Co., a division of Union Carbide and Carbon Corp., and W. C. Dabney, president of Devoe & Raynolds, Inc., have jointly announced the completion of an agreement for licensing Bakelite to operate under the epoxy resin patents held or controlled by Devoe & Raynolds. According to the announcement by Mr. Miller and Mr. Dabney, this licensing agreement and increased production facilities now under construction by Bakelite Co. will permit production in greater quantity and increased sale of epoxy resins in the many fields of application to which they are adapted. Epoxy resins are gaining wide use in protective coatings, as adhesives, and in bonding and laminating applications, as well as for parts for use in the automotive fields, Mr. Miller and Mr. Dabney stated.

Drop in Goodyear Business

Business of the Goodyear Tire & Rubber Co. for the first quarter of 1954 declined somewhat from the like 1953 period, P. W. Litchfield, chairman of the board, told stockholders at the annual meeting in Akron, Ohio, on March 29. He did not indicate the amount of the drop. Earnings, Mr. Litchfield pointed out, are favorably affected by the repeal of the excess profits tax. Stockholders at the meeting approved a change in common stock to $10 par from no par.

WASHINGTON GROUP MEETINGS FEATURE INTERESTING SPEAKERS

Approximately 50 members and guests of the Washington Rubber Group assembled in the auditorium of the Potomac Electric Power Co. Building in Washington, D. C., on February 17, to hear an address by W. James Sears, vice-president of the Rubber Manufacturers Association. The March 1 meeting of the group, held in the same place, was attended by some 55 members and guests, and featured an address by Dr. Jean Le Bras, director of laboratories for the Institut Francais du Caoutchouc, Paris, France.

Mr. Sears spoke on "Natural Rubber Quality and Supply" at the February 17th meeting, and stated that a basic problem confronting the rubber buyer in the United States today is that he often gets a grade on delivery below that which he agreed to pay for. The ideal objective, he said, is a re-approach to the conditions of good grading, good packing, and deliveries made according to standards, as were known just prior to World War II.

The speaker noted that definite progress has been made in better marking and packaging. As evidence of improvement, he noted that imports of rubber in 1953 were reported as being 28% off-grade in contrast to a high of 42% in 1951. Further improvement will be made through constant vigilance, and by setting up international groups to settle disputes as well as by establishing the widespread use of standard purchase contracts.

Le Bras Shows Film

For his part in the meeting on March 1, Dr. Le Bras showed a film which gave a comprehensive view of the rubber situation as it exists today in Indochina. He also showed a number of slides and then gave a very interesting talk after which he answered questions from the floor.

He disclosed that rubber production in Indochina now amounts to about 100,000 tons annually. In 1945, before the current communist uprisings, production was three times this figure. The quality of the rubber produced in this area, he stated, is consistently good, largely due to the fact that most of it comes from well-managed estates.

Dr. Le Bras is a strong proponent of selling rubber on the basis of technical rather than visual classification. The reason for this, he said, is that rubber from Indochina is consistently clean and can be prepared in such a way as to realize much better properties in ultimate applications. Present systems of grading with relation to color, he said, causes rubber from Indochina to be sold at below premium prices.

The speaker also spoke of the difficulties involved in running a rubber plantation in the face of communist activities. He also spoke of the activities of the Institut Francais du Caoutchouc and stated that through its activities special raw materials such as oil and carbon black masterbatches may soon be available on the world market. A reinforced rubber obtained by coagulation with chemical additives may also soon be available. (EDITOR'S NOTE: A full report on Dr. Le Bras' paper appears elsewhere in this issue).

Coming Events in the Rubber Industry

Apr. 21. Washington Rubber Group.

Apr. 30. Chicago Rubber Group, Furniture Mart, Chicago, Ill.

Apr. 30. Philadelphia Rubber Group, Poor Richard Club, Philadelphia, Penna.

May 4. Los Angeles Rubber Group, Statler Hotel, Los Angeles, Calif.

May 14. Buffalo Rubber Group in Joint Session with the Ontario Rubber Section, C.I.C., General Brock Hotel, Niagara Falls, Ont., Canada.

May 14. Connecticut Rubber Group.

May 19. Washington Rubber Group.

June 3. Rhode Island Rubber Club, Summer Outing.

June 5. Southern Ohio Rubber Group, Summer Outing.

June 8. Buffalo Rubber Group, Summer Outing, Transit Valley Country Club, East Amherst, N. Y.

June 10. New York Rubber Group, Summer Outing, Doerr's Grove, Milburn, N. J.

June 12-13. Los Angeles Rubber Group, Outing, Miramar Hotel, Santa Barbara, Calif.

June 18. Akron Rubber Group, Summer Outing.

June 18. Boston Rubber Group, Summer Outing.

June 22-25. Institution of the Rubber Industry, Third Rubber Technology Conference, London, England.

June 25. Detroit Rubber & Plastics Group, Summer Outing.

Aug. 3. New York Rubber Group, Golf Tournament, Baltusrol Golf Club, Springfield, N. J.

Aug. 20. Philadelphia Rubber Group, Poor Richard Club, Philadelphia, Penna.

Sept. 15-17. Rubber Division, A.C.S., Fall Meeting, Hotel Commodore, New York, N. Y.

Sept. 16-20. Scrap Rubber & Plastics Institute, National Association of Waste Material Dealers, Inc., Sagamore Hotel, Bolton Landing, N. Y.

Sept. 18. Connecticut Rubber Group.

Sept. 23. Southern Ohio Rubber Group, Fall Technical Meeting.

Oct. 5. Buffalo Rubber Group, Westbrook Hotel, Buffalo, N. Y.

Oct. 5. Los Angeles Rubber Group, Statler Hotel, Los Angeles, Calif.

Oct. 8. Detroit Rubber & Plastics Group, Detroit-Leland Hotel, Detroit, Mich.

Oct. 15. Boston Rubber Group, Fall Meeting, Hotel Somerset, Boston, Mass.

Oct. 22. New York Rubber Group, Fall Meeting, Henry Hudson Hotel, New York, N. Y.

Nov. 3. Los Angeles Rubber Group, Statler Hotel, Los Angeles, Calif.

Nov. 12. Philadelphia Rubber Group, Dinner Meeting, Poor Richard Club, Philadelphia, Penna.

Nov. 18. Rhode Island Rubber Club, Fall Meeting.

Dec. 3. Los Angeles Rubber Group, Xmas Party, Ambassador Hotel, Los Angeles, Calif.

Dec. 8. Buffalo Rubber Group, Xmas Party, Buffalo Trap and Field Club, Williamsville, N. Y.

Dec. 10. Boston Rubber Group, Xmas Party, Hotel Somerset, Boston, Mass.

Dec. 10. Detroit Rubber & Plastics Group, Sheraton Cadillac Hotel, Detroit, Mich.

Dec. 10. New York Rubber Group, Xmas Party, Henry Hudson Hotel, New York, N. Y.

Dec. 18. Southern Ohio Rubber Group, Xmas Party.

Need a personal file of RUBBER AGE? Use the coupon on pafe 144.

Bassick Co., Bridgeport, Conn., has announced that its series 68, H68 and H99 industrial and institutional plate-mounted casters are now available with wheels having replaceable soft rubber tread tires.

A new 28-page catalog covering its line of rotocured transmission, conveyor and elevator belting has been released by the Boston Woven Hose & Rubber Co., Boston, Mass.

TALKS BY DINSMORE AND BORDERS FEATURE N. Y. GROUP MEETING

Approximately 325 members and guests attended the Spring Meeting of the New York Rubber Group which was held on April 2 at the Henry Hudson Hotel in New York, N. Y. Principal speakers for the meeting were Dr. R. P Dinsmore, vice-president in charge of research and development for the Goodyear Tire & Rubber Co., and Dr. A. M. Borders, associate director of the Central Research Department, Minnesota Mining and Manufacturing Co.

Dr. Dinsmore, in a talk on "Polyester Rubbers", described Chemigum SL, Goodyear's new polyester rubber. He noted that this product is chemically similar to the Vulcollan rubber which was developed by the Germans. Chemigum SL, however, possesses the advantages of processability on conventional rubber equipment, making possible a wide range of applications. Vulcollan, on the other hand, is molded by casting procedures, which, Dr. Dinsmore believes, limits its present use to specialty items.

The speaker discussed the structural requirements of a good rubber and briefly reviewed the two chief methods of polymerization—addition polymerization and condensation. Unlike most rubbers, with the exception of the Thiokols, Chemigum SL is the result of a condensation polymerization. It was observed that by the use of proper control methods and the addition of amines in the preparation of the rubber, Goodyear makes a raw gum with a storage life of 6 to 12 months.

Dr. Dinsmore pointed out that the raw gum has no inherent building tack although the judicious use of methyl ethyl ketone helps considerably. Adhesion to other rubbers can be obtained through the use of tie stocks consisting of mixtures of the two stocks. Major compounding can be carried out in a Banbury followed by processing on cool rolls. Carbon blacks, he said, do very little to enhance the strength properties; concentrations over 10 to 15 parts cause a decline in desirable properties. Ordinary plasticizers act as diluents, he stated.

Dr. Dinsmore showed some interesting slides which depicted some of the end-items made from Chemigum SL. The future cost of the product, the speaker declared, is indeterminate because of uncertainties in the cost of diisocyanate, which currently runs to several dollars a pound.

Fluorine-Containing Rubbers

Dr. Borders, in his portion of the meeting, presented a paper on "Fluorine-Containing Rubbers". Dr. Borders presented a brief review of the work which has been done in this field, and made reference to Kel-F X300, a copolymer of trifluorochloroethylene recently announced by the M. W. Kellogg Co.

The speaker stated that the work at Minnesota Mining is part of an extensive research program sponsored by the Wright Air Development Center of the U. S. Air Force. Most of the monomers studied at Minnesota Mining were derived from products of the company's electrochemical method of fluorination. Olefins, nitriles, vinyl esters, vinyl ethers, dienes and acrylates have been investigated. In general, he declared, about 50% fluorine is required for outstanding solvent resistance.

The speaker described the fluorine-containing acrylates prepared from 1,1-dihydroperfluoro alcohols. He also described "Poly-FBA", an abbreviation from the polymer of 1, 1-dihydroperfluorobutyl acrylate, a new rubber developed by Minnesota Mining. This rubber, he stated, should prove most useful in fields where a high degree of solvent resistance and high-temperature stability are required.

Dr. Borders declared that materials of this type are the best studied to date for resistance to hot synthetic lubricants, especially those of the diester type. Beyond the 350 to 450°F. range, however, continued research is vital if a serviceable rubber is to be developed.

Following cocktails and the serving of a dinner, the meeting was addressed by Louis Rapp and W. C. Kimm of Reaction Motors, Inc., Rockaway, N. J., on "Fundamentals of Rocket Power." The talk was supplemented by interesting motion pictures showing some of the practical applications of rocket power.

First Great Salesman

In a recent contest sponsored by the Pioneer Rubber Co. of Willard, Ohio, David A. Levy, sales representative for Poirier & Lindeman Co., New York, N. Y., was honored as "The First Great Salesman of 1954." Pioneer Rubber sponsored the contest among wholesale sales people for 2,000 companies through which it distributes household gloves from coast to coast. As part of the contest awards, Mr. Levy's portrait was featured in a Times Square spectacular display. In New York with his wife for a week-long, all-expense paid holiday with rooms at the Waldorf-Astoria, he was booked for a round of top flight festivities and entertainment which was included in the contest prize.

Israel Seeks Zinc Oxide Plant

Industrial and government circles in Israel are interested in the establishment of a modern zinc oxide plant to meet the increasing demand for that chemical in Israel's paint, rubber, automobile tire and other industries, according to a report in "Economic Horizons," monthly publication of the Jewish Agency's Economic Department in New York City. Israel's current production of zinc oxide amounts to less than 10% of the country's estimated annual requirement of 750 to 1,000 tons. Expert opinion indicates that a plant capable of producing up to 2,200 tons a year can be established with an investment of $65,000.

NAWMD SCRAP RUBBER MEETING FEATURES TALK BY JOHN BALL

All officers of the Scrap Rubber and Plastics Institute of the National Association of Waste Material Dealers, Inc., were re-elected at the 41st Annual Convention of the parent body which was held on March 15 to 17 at the Waldorf-Astoria Hotel in New York City. The Scrap Rubber and Plastics Institute meeting was held on Monday afternoon, March 15, and featured an address by John M. Ball of the Midwest Rubber Reclaiming Co. Milton Kushkin of A. Schulman, Inc., and president of the Scrap Rubber and Plastics Institute, presided at the meeting.

In his address, Mr. Ball pointed out that it was logical to have both scrap rubber and plastics interests represented at the meeting as there is no sharp dividing line between the two. Mr. Ball noted that the statistics on plastics provided by the U. S. Tariff Commission give an inflated idea of plastics use, and therefore to get a more realistic picture it is necessary to subtract those resins used in protective coatings. If we do this, he said, the total resins used in 1953 is somewhat less than 2,000,000,000 pounds, which compares with 3,000,000,000 of natural and synthetic rubber used in that year. The plastics industry, however, is growing faster than the rubber industry.

The proportion of the various resins used in 1953 was given, and it was pointed out that polyethylene is growing much faster than any of the others. By 1955 it is expected that the total resin production will be about 3,000,000,000 pounds.

Demand for Plastics Scrap

The demand for plastics scrap is certain to be affected by this greatly expanding production of resins. The matter of quality is also involved, as there is dissatisfaction now with many cheap toys made largely from certain types of scrap. Furthermore, the price of virgin resins will likely come down during the next few years, the speaker opined.

As for scrap rubber, the demand has not been increasing as fast as we would like, he noted. One reason is the rising cost of making reclaimed rubber, and another reason is competition between reclaimed rubber and plastics. Color considerations are involved. Light colored scrap rubber has essentially disappeared. The Midwest Rubber Reclaiming Co. is trying to develop new products to take the place of plastics for certain uses. These products will require reclaimed rubber, which in turn it is hoped will mean increased demand for scrap rubber. These products will be black in color, and they will be of an industrial nature where material and the processing costs as well as quality will be the controlling factors, Mr. Ball concluded.

High capacity, low-cost centrifugal pumps made of Hycar rubber are being offered by Gorman-Rupp Industries, Inc. of Bellville, Ohio. Known as "Mansfield Line" pumps, these units are non-clogging, and extremely quiet in operation.

Susie Joins United Carbon

A. G. Susie

Dr. A. G. Susie, formerly senior scientist with the Armour Research Foundation, Chicago, Ill., has joined the technical staff of the United Carbon Co., Charleston, West Va., and has been named superintendent of research. Prior to his association with the Armour Research Foundation, as senior scientist, Dr. Susie was supervisor of its Plastics and Rubber Section. He completed his undergraduate work at Ohio Northern University and received his master's degree in chemistry at Toledo University in 1936. Dr. Susie received his Ph.D. in chemistry from Purdue University in 1939. He is the holder of several patents and is the author of numerous scientific papers. Dr. Susie is a member of the Division of Rubber Chemistry of the American Chemical Society and the Chicago Rubber Group. He is also a member of the Society of Sigma Xi.

Named Footwear Production Manager

The appointment of S. Lloyd Sammis as production manager of the Footwear and General Products Division, U. S. Rubber Co., was announced recently. Mr. Sammis succeeds Charles L. Glaes who is retiring from the company after 37 years of service, because of poor health. In his new capacity, Mr. Sammis will be responsible for manufacturing activities in the Division's plants at Naugatuck, Conn., Waterbury, Conn., Providence, R. I., Burlington, N. C., Manchester, N. H., Woonsocket, R. I., Chicago, Ill., Mishawaka, Ind., Washington, Ind., Milan, Tenn., Stoughton, Wisc. and Santa Ana, Calif. Mr. Sammis brings to his new position wide experience in industrial engineering, planning and production. He started with U. S. Rubber as an apprentice in planning after his graduation from Dartmouth College in 1928. For over 11 years he worked in the company's footwear plant at Naugatuck, Conn., as an engineer, a foreman, assistant superintendent and superintendent. During World War II he served as assistant superintendent and superintendent at a large munitions plant operated by the company at Des Moines, Iowa. After the war he was manager of industrial engineering at Mishawaka, Ind.

Alan L. Grant Co. Formed

Charles T. Wilson Co., Inc., New York, N. Y., has discontinued its trading activities in natural rubber, and the former officers of the company have decided to continue this phase of the business in the name of the Alan L. Grant Co., Inc. at 120 Wall St., New York 5, N. Y. Alan L. Grant is president of the new company, while William C. Meyer and R. A. Favenza are vice-presidents. James H. Galletly, Jr., is secretary and treasurer of the firm. The Wilson company will continue as an investment trust, handling the affairs of Charles Wilson. Mr. Grant originally joined the London office of the Wilson organization in 1919, and joined the company in New York in 1925. Shortly thereafter, he was appointed vice-president and director and, in 1947, was elected president in place of C. T. Wilson, who became chairman of the board. Mr. Grant is currently chairman of the Rubber Trade Association of New York. William C. Meyer began his career in the rubber business in 1916, joined the Wilson company in 1922 and advanced to the position of vice-president and a director. R. A. Favenza joined the Wilson concern in 1915, and except for a three and one-half year period as crude rubber specialist and administrative assistant with the Rubber Development Corporation in Columbia, South America, has been with the company since. He was elected a vice-president and a director of the Charles T. Wilson Co. on June 11, 1952. Mr. Galletly joined the Wilson concern in July, 1946 and was elected assistant treasurer in November, 1950. In June, 1952, he was elected treasurer of the company.

Diamond Alkali Appointments

Two key organizational appointments at the Diamond Alkali Co., Cleveland, Ohio, were announced recently. C. A. Butler, Jr., director of engineering for this producer of basic chemicals since 1946, has been promoted to the newly-created post of director of commercial development. Loren Scoville, since 1951 vice-president in charge of engineering, purchasing and operations for the Jefferson Chemical Co., New York, N. Y., has been named to take over Mr. Butler's work as director of engineering. Both appointments become effective April 1. "Mr. Butler relinquishes his former responsibilities to take over new and increasingly important duties of formulating and coordinating our commercial development program and integrating it more effectively into the operation division activities of our company," R. F. Evans, company president said. Mr. Scoville's addition to Diamond's executive management team, Mr. Evans added, "brings a recognized chemical processing authority into the company who, by training and experience, will be able to carry on the vital work which Mr. Butler now leaves."

An index to Volume 74 of RUBBER AGE will be found on Pages 147 to 150 of this issue.

Hewitt-Robins Advances Babcock

J. C. Babcock

J. C. Babcock, formerly production manager of the Buffalo, N. Y., factory of the Restfoam Division of Hewitt-Robins Inc., has been promoted to the position of manager of operations of the company's Restfoam Division, with responsibility for production at the company's factories in Buffalo and Staten Island, N. Y., according to an announcement by R. A. Nilsen, vice-president and general manager of the Restfoam Division. Mr. Babcock joined Hewitt-Robins in 1947 as a superintendent, becoming production manager in 1951. Before joining the company, he worked at the Bethlehem Steel Corporation's Lackawanna plant. He is a graduate of Williams College.

New Muehlstein Laboratory

The newly built research, testing and quality control laboratory of H. Muehlstein & Co., Inc., New York, N. Y., has just been opened at the company's Jersey City, N. J., plant. The Jersey laboratory will greatly expand the experimental facilities which the 43-year-old company maintains for the benefit of its plastic and rubber manufacturing clients, and is the largest of the firm's three laboratories. Besides conducting its own research it will examine and test the findings of the company's other two laboratories in Chicago and Indianapolis. The completely equipped laboratory will have three principal activities: controlling quality of materials offered for sale; improving present products being made by Muehlstein's customers and developing new products; solving customers' factory operation and processing problems.

Nu-Fab Fabric Rejuvenator

Adhesive Products Corp., New York, N. Y., has introduced "Nu-Fab," described as a plastic rubber fabric paint especially designed to rejuvenate a variety of fabrics. Nu-Fab is said to remain flexible when dry, retards fire, dry rot and mildew, repels moths and strengthens old fabrics. It also seals small holes, waterproofs and adheres patches. Easy to apply by brush or spray, Nu-Fab dries in 30 minutes and may be washed in boiling water. It comes in five colors as well as black and white.

ANNUAL NEW YORK TOY SHOW ATTRACTS 13,000 VISITORS

Approximately 13,000 buyers registered at the 51st American Toy Fair which was held on March 8 through 17 at the Hotels McAlpin and New Yorker in New York City. Other exhibits were to be seen at three other locations in the city. According to Frederick W. Doepke, president of the Toy Manufacturers of the U.S.A., sponsors of the show, ordering at the show indicated an increased trend toward summer and early fall promotions.

There was a time when the bulk of ordering in the toy industry came at Christmas time, with a lesser volume at Easter. Now, however, ordering is more evenly divided among the seasons. According to some spokesman in the trade, this change has been brought about, to a large extent, by the introduction of plastic inflatables which have been moving very well in the spring and summer months.

Oddly enough, television is proving to have a great effect on the toy industry. When a manufacturer or a distributor introduced a new toy or novelty item in the days before television, it was expected that such an item would not lose its "newness" for a year or even more. Now, however, television with its wide audience tends to dissipate the "new" quality of an item in a matter of weeks, and so the industry was caught in a rush to produce ever newer and newer items. This has also been true, some in the trade believe, with other forms of advertising. "Over-advertising" seems to be becoming a problem in the toy industry.

While exhibitors are confident that 1954 will be a good year, and notwithstanding the effects of television, most toy manufacturers seem to be looking to a period of stabilization of their lines, and a turning away from the introduction of short-run novelties.

Vinyl and Polyethylene

It is interesting to note that within the rubber and rubberlike side of the toy industry, the vinyls and polyethylene seem to be making the greatest strides. Play pools, swim rings, knock-down toys and even vinyl inflated balls were much in evidence. National Latex Products of Ashland, Ohio, for example, was showing a line of vinyl inflated balls as well as its usual line of balloons.

Among rubber items, Blake Industries, Inc. of Boston, Mass., showed an interesting array of animated rubber toys featuring a "pop-up" quality which adds to their attractiveness and play value. One of these was "Jo-Ko," an appealing little monkey whose ears pop out when he is squeezed.

Aktoy Manufacturing Co. of San Francisco, Calif., was showing its line of natural rubber squeeze toys, including some newer items, namely, "Leo the Lion" and "Mary's Lamb." Aktoy is also featuring a pop-up toy among its products.

An ever growing application for foam scrap in the toy industry continues, finding use as stuffing for dolls and animal toys. Among uses for rubber in the toy industry, foam scrap probably represents the largest growth.

Among interesting items to be seen at the American Toy Fair was a line of vinyl plastic inflatables shown by Chandler Plastics, Inc., New York, N. Y.; trucks and road-building toys by the Structo Manufacturing Co., Freeport, Ill., which featured true-scale versions of off-the-road tires; footballs, soccer balls and basketballs by the Seamless Rubber Co., New Haven, Conn.; any number of dolls featuring vinyl bodies and heads; gas-inflated balls and balloons as shown by the Barr Rubber Products Co., Sandusky, Ohio.

Also, vinyl doll mattresses as shown by the Harris Hub and Bed Spring Co., Scranton, Penna.; the line of inflatables by Doughboy Industries, New Richmond, Wisc.; vinyl doll shoes by the Progressive Doll Accessories Corp., New York, N. Y.; paddle ball games and sponge play balls by the Fli-Back Sales Corp., High Point, N. C. and squeeze toys by the Oak Rubber Co., Ravenna, Ohio.

Also, the new "Constance Bannister Baby" doll produced by the Oak Rubber Co., Barberton, Ohio; a great variety of foam rubber-stuffed toys shown by a large number of manufacturers and an equally great number of toys, made of rubber and vinyl and patterned after Walt Disney characters; tapes and decorator items shown by the Minnesota Mining & Manufacturing Co., and an infinite variety of other interesting toys made either with or from rubber and plastics.

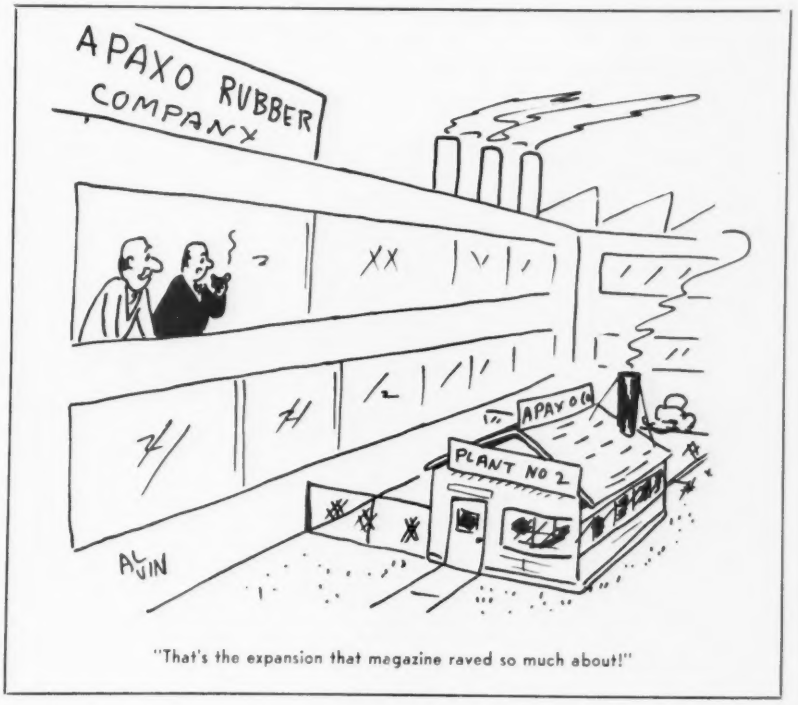
A new plastic baby-bottle bouncer made from Geon vinyl paste resin is being made by the R. V. Burrows Co., North Hollywood, Calif. The vinyl holder fits over the baby bottle and prevents breakage when the bottle is dropped or thrown from any angle.

England Enters Synthetic Field

Reports concerning the start of a synthetic rubber industry in England have been rife for the past few years. Definite moves in this direction have been announced in recent weeks by two major concerns. Dunlop Rubber Co., Ltd., has announced that it will construct a $1,400,000 plant for the production of synthetic rubber with a capacity of 2,000 tons annually, with the entire output to be used by the Dunlop organization in tires and other products. Work on the plant has already started with completion scheduled in about two years. At the same time Imperial Chemical Industries, Ltd., has announced the production of rubberlike polymers based on butadiene. Construction of a plant has been started at Wilton and pilot plant quantities will be available later this year. The annual capacity of the plant, approximately 10,000 tons, is expected to be reached before 1956.

Burchard Retirement Announced

The retirement of H. T. Burchard, assistant treasurer of the Dayton Rubber Co., after 38 years of service, was announced recently by A. L. Freedlander, president of the company. Mr. Burchard has been assistant to the treasurer since 1926 and he has been in charge of payroll operations, stockholder relations and various other financial responsibilities. A native of Chicago, Mr. Burchard has been a resident of Dayton since he was 11 years old. He attended high school in Dayton and studied at the Chicago Academy of Fine Arts. Mr. Burchard joined Dayton Rubber in 1916. He is a charter member of the firm's Quarter Century Club.



"That's the expansion that magazine raved so much about!"

All-Nylon Super-Cushion Tire

Greater protection against skids, longer mileage and quieter ride are said to be outstanding features of a new all-nylon passenger car tire announced by the Goodyear Tire & Rubber Co., Akron, Ohio. Known as the "All-Nylon Super-Cushion," the tire is a further improvement of the company's previous all-nylon unit by the same name, introduced only last year. Now, according to the company, in this latest tire the superior strength and durability of nylon cord have been combined with further research advancements which give the 1954 product these additional advantages: Better traction and skid resistance (up to 15%) provided by the tire's newly-designed tread; Improvements in compounding methods also have resulted in a tougher, stronger tread, capable of delivering more mileage (up to 12%). Squealing on turns has been practically eliminated in the new tire by an anti-vibration design in the tread.

Equally important, according to Goodyear, is a new and exclusive process developed by the company for pre-conditioning the tire's nylon cord, thereby further enhancing the strength of the carcass. Goodyear engineers explain it this way. Nylon is by far the best tire cord. Its uniform fibers, weight for weight, are stronger than steel. But nylon has a tendency to stretch under tension. To control this stretch, Goodyear chemically treats the cord then triple-tempers it by the new process (3-T), which involves tension, temperature and time. Thus the nylon cord in the new tire performs at its point of maximum strength and resiliency. Manufactured in both black and white sidewalls and in all popular sizes, the new tire is priced only slightly higher than standard tires.

Killion Joins Paul-Martin

Ward W. Killion, formerly associated with the Spencer Rubber Products Co. where he was in charge of industrial sales, has been appointed assistant sales manager of the Paul-Martin Rubber Corp., Holyoke, Mass. Mr. Killion was previously associated with the Tyer Rubber Co. as assistant sales manager of industrial rubber products, and before that was associated with the Goodyear Tire & Rubber Co. in a sales capacity for fourteen years. Mr. Killion is a registered professional engineer with over eighteen years' experience in the rubber industry. Paul-Martin is currently planning to expand its sales in the eastern, central and mid-western areas.

JLG-988 Rug Backing Latex

Angier Products, Inc., Cambridge, Mass., has announced the development of a new synthetic latex designed for rug backing to provide a non-slip surface that will prevent accidents resulting from loss of balance on slippery rugs. This product, designated as "JLG-988," is formulated to meet the stringent requirements of long-time aging and washability. It is applied to the rug back by means of a roll or knife coater.

Field Named Marietta Manager

George E. Field

George E. Field has been named manager of the Marietta, Ohio, plant of the B. F. Goodrich Company Industrial Products Division, succeeding Robert Price who has resigned. Mr. Field joined Goodrich in 1942 as production manager and later plant manager of the GR-S plant operated for the government by Goodrich in Louisville, Ky. He was transferred to Cleveland in January, 1947, as technical manager and coordinator of all GR-S plants operated by the B. F. Goodrich Chemical Co. He served on the Rubber Reserve Operating Committee and the subcommittees on process improvement, plant revisions, and test methods. In February, 1952, Mr. Field became field sales manager of Goodrich Chemical's Plastic Materials Sales Department. He is a graduate of Case Institute of Technology and a member of the American Chemical Society, American Institute of Chemical Engineers, Society of Plastics Engineers, Society of the Plastics Industry, and the Technical Association of the Pulp and Paper Industry.

Outcault Honored by A.C.S.

Harry E. Outcault, formerly manager of zinc oxide sales for the St. Joseph Lead Co., has been awarded emeritus life membership in the American Chemical Society in recognition of his service to the society and its Division of Rubber Chemistry. Mr. Outcault has been a member of A.C.S. for 37 years. He served as chairman of the Division of Rubber Chemistry during the 1947-48 season. Born at Basil, Ohio, Mr. Outcault studied at Ohio Wesleyan University and Ohio State University, receiving a degree in chemical engineering from the latter. He joined St. Joseph Lead in 1931 in charge of technical service for the Zinc Oxide Department. In 1946, he was named assistant sales manager of the department, and a few years later was named manager. He retired from active service with the company about one year ago. Mr. Outcault now resides in Carmel-by-the-Sea, Calif., where he is operating the "House of Originals", a gift shop specializing in original ceramics, designed by well-known artists.

Changes Staff Organization

A number of changes in the general staff organization of the Industrial Division of the Armstrong Cork Co., Lancaster, Penna., have been announced by W. B. Tucker, general sales manager of the Industrial Division. D. P. Paiste, manager of the Felt and Fibrous Products Department since 1951, has been named assistant general sales manager of the Industrial Division; C. T. Potts, manager of the Shoe Products Department since 1950, becomes manager of the Felt and Fibrous Products Department; and D. M. Smith, assistant manager of the Industrial Adhesives Department since 1949, succeeds Mr. Potts as manager of the Shoe Products Department. Mr. Paiste joined the Division in 1937 and served as a salesman in the Greenville (S.C.) office for nine years, working out of Atlanta. In 1947 he was promoted to manager of the Boston office and in 1951 became manager of the Felt and Fibrous Products Department. Mr. Potts served as manager of building materials and industrial products sales in the Export Division until he joined the Industrial Division as a salesmen in 1941. In 1948 he became manager of the St. Louis office and manager of the Shoe Products Department in 1950. Mr. Smith joined the company in 1945 and served in New York as a salesman until he was promoted to assistant manager of the Industrial Adhesives Department in 1949.

Hooker Plant in Operation

Hooker Electrochemical Co., Niagara Falls, N. Y., started operation of its new $12,000,000 caustic soda-chlorine plant at Montague, Mich., on March 17, according to a recent announcement. This plant, designed to be one of the most modern and up-to-date plants of its type in the world, is located on White Lake adjoining Lake Michigan and less than 200 miles from Chicago. It provides a midwest manufacturing center for Hooker, which also has large plants at Niagara Falls and Tacoma, Wash. The plant will supply 50% and 73% liquid caustic soda and liquid chlorine in tank cars to many industries. Caustic soda also will be shipped in bulk by barge direct to customers as well as to the company's storage facilities on the Illinois Waterway at Lake River Terminal near Chicago for local distribution. In addition, the plant is expected to be a nucleus for other chemical manufacturing plants desiring its basic chemicals. It was recently announced that E. I. du Pont de Nemours and Co. and Union Carbide and Carbon Corp. plan to build large chemical plants on adjoining sites.

File Bankruptcy Proceedings

Rubber Corporation of America, Brooklyn, N. Y., and two other companies have filed a petition of bankruptcy against the Gem Rubber Corp. of New York, N. Y. According to the petition on file, $4,788 is owed the Rubber Corporation of America by Gem Rubber. Lesser sums, involving $1,064 and $243, were claimed by the other two firms.

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Recent OSR Announcements

The Office of Synthetic Rubber, Reconstruction Finance Corporation, has announced that in the interest of increasing the over-all efficiency of its plants, consideration has been given to the use of an activated recipe in the production of "hot" polymers. In this respect, the number X-759 was recently assigned to an experimental polymer, polymerized in an organic hydroperoxide-sugar activated recipe. The experimental polymer is identical to GR-S 1000 except for the type of activation and the shortstop. It is described as follows: 23.5% bound styrene, hydroperoxide-sugar activated, fatty acid soap emulsified, 122° F. reaction temperature, 68% conversion, carbamate shortstopped, staining stabilizer, salt-acid coagulated. Mean raw Mooney 48 ML-4.

Previous experience demonstrated that the use of an activated recipe is feasible in high temperature polymerization. Therefore, in order to avoid a prolonged evaluation period and the duplication of the entire line of hot GR-S types with activated counter parts, the evaluation of the activated recipe will be confined to X-759. If consumer evaluations indicate the polymer to be equivalent to GR-S 1000 and the activated and unactivated recipes to be interchangeable, the entire line of hot dry polymers will be converted to activated type formulae. A production run of X-759 is to be scheduled in the near future. This run should be of sufficient volume to permit all interested consumers to evaluate the polymer.

OSR has also announced that certain companies have expressed an interest in a mixed soap (rosin/fatty acid) emulsified staining type cold polymer and the number X-762 has been assigned to such a polymer. X-762 will be identical to GR-S 1500 except for the mixed-soap emulsification. It is described as follows: 23.5% bound styrene, sugar-free iron activated, 50/50 rosin/fatty acid soap emulsified, 41° F. reaction temperature, 60% conversion, Carbamate shortstopped, staining stabilizer, salt-acid coagulated. Mean raw Mooney 52 ML-4. A production run of X-762 is to be scheduled in the near future.

Personnel Shifts at Swift

Three key employees of the Industrial Oil Department, Swift & Co., Chicago, Ill., have assumed new responsibilities according to a recent announcement. Raymond W. Starmann, formerly assistant sales manager, has now been assigned to market development work for the department. Charles C. Caruso, formerly raw material buyer for Industrial Oil and Soap Departments at the Hammond Technical Products and Chicago plants, has been named assistant sales manager of the Industrial Oil Department. John F. Deardorff, formerly assistant head of the Tallow Sales Department, has been named to succeed Mr. Caruso as raw material buyer.

Can't locate the office copy of RUBBER AGE when you need it? Use the coupon on page 144.

Planning Venezuelan Plant

A modern tire plant using high speed production line methods will be constructed in Guacara, Venezuela, by United States Rubber Internacional de Venezuela, C. A., a subsidiary of the U. S. Rubber Co., it was announced recently. The new plant which is expected to start production by the fall of 1955, will produce U. S. Royal tires and tubes for passenger cars and trucks. It will be U. S. Rubber's sixth Latin American plant to make these products. It will also be the rubber company's second plant in Venezuela. It also operates a footwear plant there. The plant will be specially designed for the production of tires in a tropical climate and will have 20,000 feet of manufacturing area. It is being built on a 50-acre plot, so that there will be room for expansion when needed, the company stated.

Buys Titanium Dioxide Plant

American Cyanamid Co., New York, N. Y., and the New Jersey Zinc Co., New York, N. Y., have entered into a contract under which N. J. Zinc will purchase American Cyanamid's Gloucester, N. J., titanium dioxide plant. The plant will be turned over to N. J. Zinc after American Cyanamid's new and larger titanium dioxide plant at Savannah, Ga., now under construction, has been completed and placed in operation. It is expected that this turnover will be made some time in the latter part of 1955.

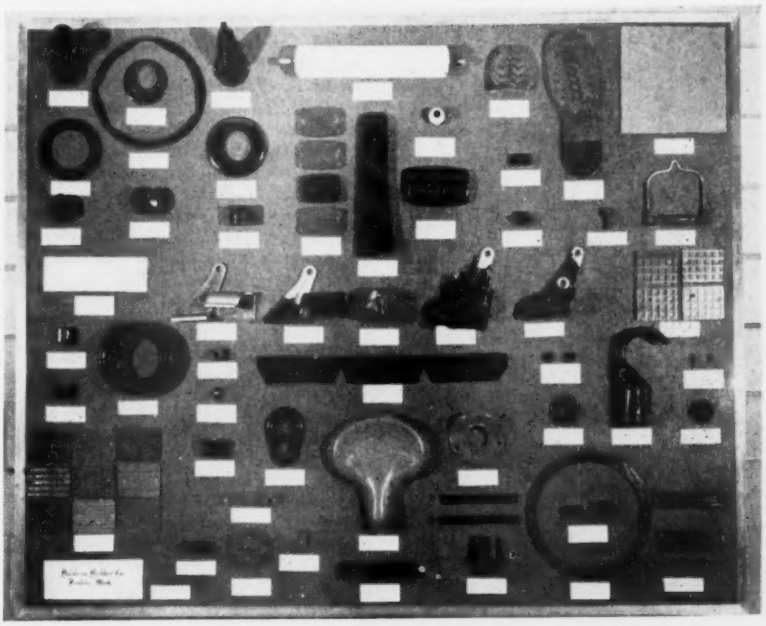
Goodrich Expansion Program

According to J. A. Hoban, vice-president in charge of replacement sales for the Tire and Equipment Division for the B. F. Goodrich Co., the firm will, during 1954, increase by 35% over last year its expenditures for new and improved facilities. Mr. Hoban, speaking before a recent meeting of the New York Sales Executives Club, further stated that the company's sales volume in 1954 is expected to be second only to that of 1953, the all-time record high for the company. Goodrich, according to Mr. Hoban, is investing more than $30,000,000 for new and better facilities in 1954. This will be about 35% more than the $23,000,000 the company invested in 1953, and substantially above the amount Goodrich ever spent in capital improvements in a single year. A sizable portion of the 1954 investment will be employed to increase the production and distribution of tubeless passenger car tires.

Introduces New Vinyl Stabilizer

Vinyl stabilizer "D-22" (dibutyl tin dilaurate), is now available in commercial quantities from Carbide and Carbon Chemicals Co., New York, N. Y. D-22 is said to be an outstanding heat and light stabilizer for chlorine-containing vinyl resins and is particularly suitable for use in clear vinyl compounds. Rain boots, garden hose, shower curtains, draperies, and upholstery are among the vinyl plastics products in which stabilizer D-22 can be used to advantage.

DISPLAY BOARD PREPARED FOR DETROIT GROUP EDUCATIONAL PROGRAM



Shown above is a display board prepared by employees of the Baldwin Rubber Co., Pontiac, Mich., for use in the educational program, sponsored by the Detroit Rubber & Plastics Group, which is currently in session at Wayne University in Detroit, Mich. The display board shows a rather wide selection of molded parts made in a typical mechanical goods factory. It features in the middle section some of the more important steps in the manufacture of a motor mounting insulator. It also shows the raw materials, uncured rubber preparation, the cured assembly and finally the finished product ready to ship.

NAMES IN THE NEWS

J. D. Hershey, associated with the Dayton Rubber Co. for the past twenty-four years, has been appointed director of sales promotion and advertising. R. L. Wetzel, with the company since 1925, has been appointed director of public relations.

A. R. Davis has been named manager of the Rubber Chemicals Department at the Stamford Research Laboratories of the American Cyanamid Co. at Stamford, Conn.

Cyril R. Porthouse, president of the Pyramid Rubber Co., and Francis W. Chase, president of Chase and Sons, Inc., participated in the annual "School for Presidents" conducted by the Young Presidents Organization on March 8-14 at Boca Raton, Fla.

Cyrus E. Silling, Jr., formerly associated with the Ohio Apex Division of the Food Machinery & Chemical Corp., has been appointed manager of the Plastics Chemical Division of the Witco Chemical Co., with headquarters in New York City.

E. William Eipper, formerly associated with the Oronite Chemical Division of the Standard Oil Co. of California, has joined the Market Research and Development Department of the Stauffer Chemical Co., with headquarters in San Francisco, Calif.

John Lochman, previously associated with polyethylene activities at E. I. du Pont de Nemours & Co., Inc., has joined the staff of the Chester Cable Corp., Chester, N. Y.

Norman J. Ouellette of Plast-D-Vision Sales, Leominster, Mass., has been appointed New England sales representative of the Injection Molders Supply Co., Cleveland, Ohio.

Lee H. Clark, associated with Sharples Chemicals Inc. for twenty-five years, has been appointed president of the company.

H. L. Mollenkopf, controller of the General Tire & Rubber Co., is attending the current session of the Advanced Management Program of the School of Business Administration, Harvard University.

Dr. Edward A. Kern, formerly manager of the materials and process laboratory at the Pittsfield, Mass., plant of the General Electric Co., has been appointed manager of engineering for the Silicone Products Department at Waterford, N. Y.

Jan Willums, European technical representative of the Philblack Export Sales Division of the Phillips Chemical Co., has been transferred from Copenhagen, Denmark, to Zurich, Switzerland, effective April 1.

Sylvan C. Coleman, a director of the United Carbon Co. since 1937, has been elected a member of the Executive Committee.

Charles M. Kirkland and David W. Nurse, both vice-presidents of the Okonite Co., Passaic, N. J., have been elected to the board of directors of the company. Frederic M. Kirkland has resigned as a director.

Harold D. Tompkins, vice-president in charge of trade sales for the Firestone Tire & Rubber Co., was recently honored on his completion of 35 years' service with the company.

Robert N. Wolfe, associated with the Minnesota Mining & Manufacturing Co. since 1939, has been named production manager of the Adhesives and Coatings Division.

John W. Gosselin has been appointed a vice-president of the Phoenix Manufacturing Co. of Joliet, Ill.

Max F. Moyer, manager of the Cycle Tire Sales Department of the Goodyear Tire & Rubber Co., has been elected a director of the Bicycle Institute of America.

Louis M. Boulware, associated with the U. S. Rubber Co. since 1938, has been appointed assistant production manager of the Textile Division with headquarters at Winnsboro, S. C.

Dr. Frank W. Hightower, formerly associated with Goodyear, the Barrett Division of Allied Chemical & Dye, and the Mellon Institute, has joined Branson Instruments, Inc., Stamford, Conn., where he will be charged with the development and adaptation of high power ultrasonic energy generators to chemical plant processing.

Ross-Waldron Tire Cord Unit

In cooperation with engineers of the Goodyear Tire & Rubber Co., the J. O. Ross Engineering Corp. and the John Waldron Corp., have developed handling, dipping and drying machine lines which are used in the production of "3-T" tire cord by Goodyear. The process is described as triple action tempering involving tension, temperature and time. Each complete machine line is six stories high and several hundred feet in length. It has also been announced that Walter C. Klesnor of Ross Engineering has just returned from an extensive trip through Europe. His visits to companies abroad concerned investigations on rayon and nylon tire fabric drying and stretching equipment with tensions up to 20,000 pounds on the fabric web.

Crabtree Retirement Announced

James Crabtree

The retirement of James Crabtree from active service with the Bell Telephone Laboratories was recently announced. Mr. Crabtree was graduated from the University of Manchester and has been engaged in research throughout his professional career. His early fields of endeavor included agriculture and photography and he has made significant contributions to the precision development of sound motion picture film. For the past fifteen years, he has been studying the effect of thermal and light activated oxidatation as well as other deteriorating factors such as ozone on elastomeric materials. He is the senior author of such papers as "Weathering of Soft Vulcanized Rubber," and "Accelerated Ozone Weathering Test for Rubber". Mr. Crabtree does not intend to remain inactive and is exploring the possibilities for consulting work in the field of his recent interests. He may be reached at Box 342, R.D. No. 2, Plainfield, N. J.; telephone number, Elliott 6-6071.

Iowa Management Course Set

The College of Engineering, State University of Iowa, has announced the fifteenth Management Course to be held June 14 through June 26, 1954, in Iowa City. Since its inception over 1,000 representatives of American and foreign business, industrial, and governmental organizations have increased their understanding of the design and application of the major management techniques. It is an intensive course for factory managers, foremen, industrial engineers, methods and time-study analysts, cost accountants and office executives. The areas of production planning, job evaluation, motion and time study, wage incentives, plant layout, materials handling, quality control, supervisory training, labor relations and legislation, organization and policy, and public speaking are included. The regular State University of Iowa teaching staff will be augmented by outstanding men from a variety of industries and other educational institutions. Communications concerning the course should be sent to J. Wayne Deegan, 124 Engineering Building, State University of Iowa, Iowa City, Iowa.

Goodrich Advances Scull

William W. Scull

William W. Scull has been named director of manufacturing services of the B. F. Goodrich Co., according to a recent announcement. Mr. Scull, since 1952, has been director of purchasing and traffic. In his new capacity, Mr. Scull will carry responsibility, at the corporate staff level, for purchasing, traffic, raw materials planning, engineering design and construction, machine development, time study and methods, industrial engineering, and safety. He will report to J. W. Keener, vice-president. Mr. Scull joined Goodrich in 1929 shortly after his graduation from Cornell University as a mechanical engineer. He served in the company's purchasing and sales divisions until the rubber emergency occurred during World War II when he was named chairman of the rubber industry purchasing committee responsible for obtaining materials to build and equip the plants in the nation's synthetic rubber program. In 1944 he became manager of the government synthetic rubber plant in Port Neches, Texas, built and operated by Goodrich. Later he became manager of a synthetic rubber plant in Louisville, Ky., also built and operated by his company. In 1945 he became production manager of all plants operated by the B. F. Goodrich Chemical Co., a division of Goodrich, and in 1947 was named general manager of manufacturing services of the company's Akron, Ohio, plants. He became director of purchases and traffic for the company in July, 1952.

Licensing the Kreidl Process

Kreidl Chemical Physical Co. has announced the availability of licenses to use the "Kreidl Process," a method to make polyethylene surfaces receptive to printing inks and adhesives. This process is of interest to all extruders, converters, molders, fabricators and printers of polyethylene film, coated paper and board, bottles, and of all other extruded and molded articles. Non-exclusive licenses at moderate rates can be obtained upon application to the company at 57 West 58th St., New York 19, N. Y., or 81 East State St., Columbus 15, Ohio; or to the Kreidl KG, 169 Engerthstrasse, Vienna 2, Austria.

U.S. Answering Tire Suits

The United States Government, on March 25, began filing answers to nineteen lawsuits brought by rubber companies and some of their customers in protesting a Federal Trade Commission ceiling on tire discounts. Briefly, the rule provides that the discount on a single carload of tires or tubes shall be the top discount granted. The rule aims to protect smaller tire customers from allegedly unduly low prices available to their larger competitors. The companies asked the courts to kill the FTC rule which they say will upset their traditional business methods and lose them some of their best customers, namely mail order and gasoline station firms.

In reply to the suit filed by the U. S. Rubber Co., first of the nineteen answers, the government noted that the biggest tire customers, each buying $600,000 worth or more a year, number only sixty-three. FTC charges that "it found a situation promotive of monopoly in the replacement tire and tube industry, wherein there were approximately 48,000 purchasers and 21 manufacturers." The government also maintains a proper FTC hearing was held before the rule was ordered, and that the facts justify the FTC discount rule. The companies' charge that the ruling denied them due process, that it hurt them without allowing them a court hearing, was answered by noting that the rule is not in effect during the present suits.

Originally, FTC had fought the companies when they tried to bring the present court test. A District Court Judge agreed with the FTC, but a District Court of Appeals agreed with the companies and ordered the trial. The next step will probably be a move to consolidate the nineteen suits into one. Then the companies may move for a summary dismissal of the case. If carried through to trial, the case would probably reach court in September, 1955, informed sources stated.

Merger Plan Announced

Attapulgus Minerals and Chemicals Corp., Philadelphia, Penna., and Edgar Brothers Co., Metuchen, N. J., have announced that a basis for merging the two companies has been agreed upon, subject to ratification by directors and stockholders. The name of the merged company will be the American Minerals & Chemicals Corp. The merger will be accomplished through an exchange of shares. The Attapulgus and Edgar Brothers businesses will retain their identities and will be operated as separate divisions of the merged company. Attapulgus is among the largest producers of fullers earth, used mainly in the chemical and petroleum industries. Edgar Brothers is one of the largest integrated producers of kaolin.

An index to Volume 74 of RUBBER AGE will be found on Pages 147 to 150 of this issue.

Wooster Rubber Promotes Gigax

Lester E. Gigax

Appointment of Lester E. Gigax to the post of assistant factory manager, a newly-created position, has been announced by the Wooster Rubber Co., Wooster, Ohio. In his new position, Mr. Gigax will report to Forrest B. Shaw, vice-president in charge of manufacturing for the company. Mr. Gigax was formerly with General Electric's Niles, Ohio, glass plant where for four years he was engaged in quality control and product development engineering. He joined Wooster Rubber two-and-a-half years ago. Mr. Gigax graduated "with distinction" from Purdue University in 1947 where he received his B.S. in mechanical engineering. He is a member of Pi Tau Sigma, national honorary mechanical engineering fraternity. He served three years in the Army Quartermaster Corps and later transferred to the Air Corps where he became a B-29 pilot. He was discharged with the rank of captain.

Wolf Elects New Officers

Jacques Wolf & Co., Passaic, N. J., has announced the names of its three new top officers, following the recent death of its founder, Jacques Wolf. Schuyler E. Tylee was elected president of the firm; Gerald J. Desmond, vice-president, treasurer and general manager; and Arnold Pfister, secretary and plant manager. The company headed by these three men is a major supplier of chemical products for the rubber, textile, leather, food, drug and cosmetic, paper and allied industries, with plants in Clifton, Passaic and Carlstadt, N. J., and Los Angeles, Calif.

Literature on Chemigum SL

The Chemical Division of the Goodyear Tire & Rubber Co., Akron, Ohio, has announced the availability of reprints of two papers dealing with specific properties of Chemigum SL. The first of the reprints is a copy of an address given before a recent meeting of the Washington Rubber Group by Dr. R. P. Dinsmore, vice-president in charge of research and development. This address generally describes the experimental product. The other is an article reprinted from *Industrial and Engineering Chemistry*, and concerns the wear properties of Chemigum SL.

LE BRAS OFFERS NEW CONCEPT OF PURCHASING NATURAL RUBBER

Dr. Jean Le Bras, director of laboratories of the French Rubber Institute (Institut Francais du Caoutchouc), recently concluded one of his periodic visits to the United States. The purpose of these visits is to exchange technical information and, as usual, Dr. Le Bras visited with leading American rubber technologists. He returned to France on March 24 on the *S. S. Liberté*.

During his five-week visit, Dr. Le Bras presented a paper before a special meeting of the Washington Rubber Group (as reported elsewhere in this issue) as well as to special groups in various localities, including Akron, Boston and New York. In the course of these presentations, he proposed a new concept with regard to the grading of natural rubber and outlined the importance of Indo-China in the natural rubber field. In the latter instance, he presented both a movie and colored slides.

With regard to the grading of natural rubber, Dr. Le Bras, in his talks, stressed the point that Indochinese rubber was clean and well packed and, accordingly, the Indochinese planters are more concerned with the quality of the rubber they ship or, to put it another way, in the various qualities American rubber manufacturers require. In this connection he pointed out that natural rubber is still being sold (and bought) on the basis of appearance without any other specific qualities being taken into account, although neither GR-S or Butyl rubbers is bought on any such basis.

Notes Processing Problem

At this point, Dr. Le Bras stressed the fact that latex on the estates must be processed into rubber the same day it is procurred and that the properties of the latex vary with numerous factors, such as type and age of the producing trees, weather, periods of the year, etc. The planters consequently must regulate both coagulating and drying treatments in order to obtain the most profitable result under present market conditions, namely, they must strive to produce R.S.S. 1 grades. Since rubber is judged on visual appearance, the planters frequently have to lower the qualities of the rubber to meet appearance standards. For instance, if bubbles (or blisters) appear on the sheets they must be eliminated, although such bubbles have no influence whatever on the properties of the raw rubber which must eventually be broken drown and compounded with numerous ingredients before being vulcanized.

According to Dr. Le Bras, intensive studies have been made on latex variability and the influence of processing conditions on the technical properties of rubber. Indochinese planters, he said, know how latex should be treated to produce a technically homogenous rubber, but cannot utilize such treatments under present market conditions since the end result would not be R.S.S. No. 1 insofar as visual appearance is concerned. These planters realize a goal where rubber would be judged on its performance alone rather than on its appearance is not too easily attained, and accordingly adopted technically classified (T.C.) rubber as an intermediate stage.

Dr. Le Bras noted that Malaya and Indonesia have made intensive efforts in this field and the production of technically classified rubbers in 1952 reached 25,000 tons and about 35,000 tons in 1953. Indodonesia have made intensive efforts in this china alone produced 9,000 tons, or about 20% of its total smoked sheet production, and this figure would have been higher if marking had not been hindered by the fact that rubber had to be sent to Saigon immediately after baling to prevent its being destroyed by guerillas. He emphasized the fact that although the total tonnage of T.C. rubber is not too large, it is sufficient to enable rubber manufacturers to secure experimental lots and conduct their own evaluations. He urged that such evaluations be furnished to the International Rubber Research Board since only cooperation between manufacturer and supplier will result in still better rubber.

The French rubber expert also discussed some of the specialty rubbers which are now being developed. From contacts with European rubber manufacturers maintained by the French Rubber Institute it appears that many small firms, not equipped with internal mixers, would welcome rubber peptized at the plantation with a Mooney viscosity approximating 35 to 40 so that they could do without previous mastication and save both time and power. Successful experiments have been conducted with such peptizers as RPA No. 3 and Renacit 4-L. Experiments are also being conducted with regard to shipments in lightweight metal drums to guarantee the cleanliness of the rubber.

Cleanliness could also be improved, he observed. Indochinese rubber prepared by the usual process methods is very clean, but some of the present fabrications may require even a higher degree of cleanliness than the present limit. Preliminary treatment of latex permits such an improvement, but the manufacturer should specify exactly what he wants.

Also being studied, Dr. Le Bras declared, are possibilities of preparing masterbatches with carbon black or oil. Conclusions on either the technical or economic feasibility of such production cannot as yet be determined. However, he stated, oil-extension, probably connected with an adequate rubber modification, may give interesting results.

High Modulus Rubbers

Dr. Le Bras also spoke of the so-called high modulus rubbers, prepared at the plantation by adding chemical modifiers, such as amine-type chemicals, to the latex. In the case of pure gum compounds (RMA Crude Rubber Committee Formula), modulus at 500% is obtained at around 2,800 pounds per square inch, against 1,000 for the highest possible modulus given by a standard rubber.

In the case of black compounds, of the classical tire tread type, modulus increase is, of course, proportionately less important. Here, it averages 15% and the other mechanical properties are improved by about the same proportion. The influence on heat build-up is most outstanding, however, since heating is brought down by 20 to 25%. This offers evident possibilities of improving the performance of large size tires, especially heavy-duty types. The Institute's Indo-China pilot plant is preparing batches with which practical tests can be carried out on tires. Samples can also be distributed to interested manufacturers.

Dr. Jean LeBras

In the latex field, he stated, the Institute has systematically studied the influence of seasonal variations on the properties of concentrated latex so as always to abide by A.S.T.M. specifications. However, its laboratories have developed a special type of latex for foam rubber fabrication. This type contains a thermosetting agent and its characteristics are controlled. An experiment is now being carried out with a manufacturer in Saigon who has been using this process satisfactorily for over a year.

Production Difficulties

In other parts of his address before different groups in this country, Dr. Le Bras spoke of the great difficulties encountered in the production of rubber in Indo-China, resulting in great part from the activities of the Communists. He stated that the average productivity of Indochinese estates is relatively high. In 1953, for example, 74,000 tons were produced on 212,000 acres, or approximately 780 pounds per acre. If not for the lack of labor, the yield should approximate 900 pounds per acre under normal conditions.

For the most part, he noted, Indochinese production consists of smoked sheets which amount to 65% of the total, crepes, 16%, and sole crepe, 9%. Production of concentrated latex reached a total of 1,100 tons (dry rubber content) in 1952 and 2,500 tons in 1953.

It should be noted that the Indochinese plantation firms have provided for centrifuging equipment which would permit

a yearly production of 25,000 tons of latex (dry rubber content). Certain plantation factories are equipped so that they can treat the whole daily latex collection as smoked sheet, crepe, or concentrated latex at will.

As to the commercial quality of Indochina rubber, the various grades of smoked sheet are divided into 75% No. 1 R.S.S., 17% No. 2 and 8% No. 3. These figures, Dr. Le Bras pointed out, emphasize the very favorable situation of Indochina at the technical level.

In all of his talks Dr. Le Bras stressed the point that the French Rubber Institute was eager to cooperate with American rubber manufacturers to enable improved and better rubbers to be produced and shipped. He also offered to elaborate on any of the points made in his talks and welcomes inquiries. He can be reached at the French Rubber Institute, 42 Rue Scheffer, Paris, France.

To Head BDSA Chemical Section

Appointment of Harold H. Smith, of Concord, Calif., as director of the Chemical and Rubber Division, Business and Defense Services Administration, U. S. Department of Commerce, has been announced by BDSA Administrator Charles F. Honeywell. The new director, who is on loan to the government from his position as executive assistant to the general manager of the Western Division, Dow Chemical Co., succeeds Norman E. Hathaway, who has returned to his position as sales manager of the Industrial Chemicals Department, Davison Chemical Co., Baltimore, Md.

Hobbs Elected Vice-President

At the recent annual meeting of the board of directors of the Gro-Cord Rubber Co., Lima, Ohio, and its wholly-owned subsidiaries, Gro-Cord Rubber Co. of Canada, Ltd., and the Alfred Hale Rubber Co., Fred J. Hobbs was elected vice-president and factory manager of the parent company. Winston L. Hunt was elected a director of the parent company as well as the Alfred Hale Rubber Co. All other officers and directors were re-elected.

Frost Opens Sales Office

Francis S. Frost has announced the opening of an office at 30 North La Salle St., Chicago 2, Ill., from which he will operate as a manufacturers' representative. He has already been appointed sales representative to serve the western parts of Michigan and Indiana by Stewart Bolling & Co. Other accounts include F. Lester Kittle Co. and the Chicago Cutting Die Co. Mr. Frost also represents the Sinclair Collins Valve Co. in the State of Wisconsin.

Purchases Blumenthal Plant

Sponge Rubber Products Co. of Shelton, Conn., has purchased the land and thirty-four buildings of the Sidney Blumenthal Co. at Shelton for a reported $1,500,000. Sponge Rubber Products plans to enlarge its operations in the newly-acquired plant.

Builds New Chicago Branch

Pioneer Rubber Mills, San Francisco, Calif., has announced that its third new branch building in as many years is now in operation in Chicago at 5555 North Northwest Highway. Improving branch facilities has been a necessary adjunct to a current expansion and modernization program at the Pioneer factory. Although main offices are in San Francisco, the plant is located at Pittsburg, Calif., a nearby industrial town. It is classed as one of the most modern industrial rubber manufacturing plants in the country. New equipment installed toward the end of last year, for example, flows lead around hose on a continuous schedule as part of the preparation for vulcanization. This machine is said to be the only one of its type in the U. S., and has advantages from both product quality and production standpoints. In addition to fire, industrial, and garden hose, the company makes belting, packing, and other molded goods. An affiliate makes plastic garden hose and other plastic products.

Detroit Group Hears Buckler

The Detroit Rubber and Plastics Group held its regular Winter Meeting on February 12, at the Detroit-Leland Hotel in Detroit, Mich. Over two hundred members and guests were on hand to hear a paper on "Alfin Rubbers," presented by Dr. E. J. Buckler, research manager of the Polymer Corp., Ltd., Sarnia, Ont., Canada. Dr. Buckler's presentation included a rather unique demonstration of the polymerization reaction, and a display of many articles made from the new rubbers. The pre-dinner technical session was followed by a cocktail hour, dinner and an after-dinner program. At this portion of the meeting, R. E. Hatch, sales and technical service manager of the Polymer Corp., presented an interesting film called "Polysar." This film on the operations at Sarnia showed the manner in which synthetic rubber is produced.

Buffalo Group Hears Beaver

The March 9th meeting of the Buffalo Rubber Group held at the Westbrook Hotel in Buffalo, N. Y., featured an address by Dr. D. Beaver of the Monsanto Chemical Co. Dr. Beaver addressed the group on "Vulcanization Theories." Fifty-five members and guests attended the meeting. In his address, Dr. Beaver pointed out that there are many theories existing today which deal with the vulcanization of rubber. He elaborated on a few of them, including Fisher's theory which deals with the formation of hydrogen sulfide during vulcanization; Barton's theory in which an accelerator forms a mercaptan which reacts with zinc and continues the reaction, finally cross-linking with sulfur; and Farmer's theory, which deals with free radicals and also ends with the formation of hydrogen sulfide. He also reviewed the Parks method of vulcanization with sulfur chloride without heat; the Peachey process involving hydrogen sulfide with sulfur dioxide; and non-sulfur vulcanization with chloranil and m-dinitrobenzene. The after-dinner speaker was R. M. Glazier of the Sales Department of the National Gypsum Co. He gave an interesting and amusing talk entitled, "Do It Yourself," which concerned itself with the products manufactured by his company for the modification and beautification of the home.

Southern Ohio Holds Meeting

The Spring Meeting of the Southern Ohio Rubber Group was held on March 25 at the Engineers Club in Dayton, Ohio, with approximately 100 members and guests in attendance. Speakers for the meeting were Fred C. Wagner, process superintendent of the DuPont neoprene plant in Louisville, Ky., and Dr. N. R. Legge, director of research and development at the Kentucky Synthetic Rubber Corp. Dr. Wagner showed movies of the neoprene plant and discussed the plant tours arrangement for the Spring Meeting of the Division of Rubber Chemistry, A.C.S., which will be held in Louisville. Dr. Legge, with the aid of flow charts, showed how synthetic rubber is made from the introduction of raw materials to the packaging of the finished product.

Boston Holds Spring Meeting

The Spring Meeting of the Boston Rubber Group was held at the Somerset Hotel in Boston, Mass., on March 26. The afternoon technical session was attended by 150 members and guests and featured the presentation of two papers. The first of these, by Dr. Frank A. Bovey of the Minnesota Mining & Manufacturing Co., concerned fundamental information on the types of fluorine-containing rubbers used for military aircraft. The other, by B. B. White of the General Electric Co., had to do with the outstanding properties and methods of compounding the various silicone rubbers. The afternoon technical session was followed by a dinner and business meeting, attended by some 375 members and guests.

FINANCIAL NEWS

NET EARNINGS OF SEIBERLING SET AT $1,035,740 IN 1953

Earnings of the Seiberling Rubber Co., Akron, Ohio, for 1953 increased 9% over the 1952 level despite a 3% decline in net sales, president J. P. Seiberling told stockholders recently in the annual report. In addition, the company started several projects which should "increase, diversify, and strengthen" its business in the future, Mr. Seiberling said. Net sales dipped slightly —from $41,646,702 in 1952 to $40,351,305 in 1953—principally because of military cutbacks, the report said. Earnings climbed from $948,915 a year ago to $1,035,740 in 1953. Earnings for the year amounted to $2.10 per share of common stock, based on 391,430 shares outstanding, compared with $1.94 for 1952, based on 376,010 shares.

Because the company sells no tires for new cars, "Seiberling did not share in the banner year enjoyed by the auto industry, resulting in near-record output of tires for original equipment," the company president said. "In the principal fields in which we compete, however, our sales compared favorably with other rubber companies," he added.

Rubber industry sales of replacement tires were slightly above the 1952 level, he said, and "Seiberling's sales to this market increased at a higher rate." Sales volume was lost through cuts in the military purchasing program following the Korean truce, and from lower prices in the export market, Seiberling said.

A contract signed in September makes Seiberling the major supplier of Atlas tires for Standard Oil Co. of Ohio. But volume production did not start until after the tire-buying season, the report said, so the contract had little effect on 1953 output.

During the year Seiberling announced its entry into the plastics field, and a new plant is being built at Newcomerstown, O., to process rigid plastic sheets. Other materials also will be produced, Mr. Seiberling said, including a leather replacement with "remarkable properties of appearance and durability."

The company has embarked on its first full-scale overseas manufacturing venture, by organizing a corporation to build a new tire plant in Bogota, Colombia, in association with a rubber products firm there.

The Canadian plant is being modernized and enlarged, a new branch office and warehouse distribution center is being built in Montreal, and the Canadian subsidiary is completing a large new retail sales center in Toronto, Mr. Seiberling said.

Plant improvements also are being completed in Akron, to "increase productive capacity and reduce maintenance expense," he said. The report showed that $1,275,016 was spent for plant additions against a depreciation allowance of $637,024.

Mr. Seiberling told stockholders the company expects to acquire an interest in one of the government synthetic rubber plants to be offered for sale this year, but that the amount of the bid is not yet known.

Commenting on the board's recent action in reducing the quarterly common dividend from 25 cents to 10 cents, Seiberling said "heavy cash expenditures" for expansion, plus the possibility of the synthetic plant investment, made it necessary to conserve working capital.

The balance sheet for December 31 shows total current assets of $15,946,988 and current liabilities of $4,867,573, a ratio of 3.2 to 1, with working capital up $1,036,456 to a year-end total of $11,079,415, an all-time high. To accomplish this, the company increased its long-term debt by $1,373,800 by refinancing an insurance loan, issuing new bonds in Canada, and redeeming outstanding bonds.

Mr. Seiberling said the company acquired full ownership of Seiberling Rubber Co. of Canada, Ltd., during the year, through an offer to minority shareholders to exchange one share of their stock for two shares of the parent company's stock. The transaction increased the number of outstanding common shares by 15,420, and added $260,599 to capital surplus—the difference between the equity acquired and the par value of stock issued. Total surplus at the year end was $9,052,275, an increase of $747,461 over the 1952 figure.

Prospects for the tire industry in 1954 appear good, Mr. Seiberling told shareholders, with the replacement market expected to be improved over 1953 but highly competitive. "I feel sure we will be able to sell our full share of this market," he said, and added that over-all results should be "at least on a par with those reported for 1953."

HEWITT-ROBINS SALES IN 1953 ESTABLISH NEW COMPANY RECORD

Sales of Hewitt-Robins Inc., Stamford, Conn., reached an all-time record of $38,494,309 in the year ending December 31, 1953, compared with $37,364,512 in 1952, according to the annual report to stockholders released recently by Thomas Robins, Jr., president. Net profit after taxes was $1,231,696, a gain of 17% over 1952 profit of $1,051,199, equivalent to $4.29 a share on 287,051 shares of stock outstanding at December 31, 1953, compared with $3.67 on the 286,051 shares outstanding at the close of the previous year.

The report listed net earnings before Federal income taxes of $2,296,696, compared with $2,129,749 in 1952. Taxes were 46.4% of earnings before taxes in 1953, compared with 50.6% in the previous year. The rate was lower because of credit taken for an anticipated refund of 1951 taxes, when the rate was 60.8%.

Net working capital at the end of the year was $10,356,918 compared with $10,315,591 at December 31, 1952. Cash on hand amounted to $2,556,289, compared with $2,579,867 at the end of 1952. Wages and salaries for the year amounted to $12,988,342, compared with $11,725,169 in the previous year. The cost of materials, supplies and services was $22,388,854, compared with $22,951,959 in 1952.

A total of $805,740 was invested in buildings and equipment. These improvements included: New experimental testing equipment at Buffalo incorporating advanced methods for testing heavy-duty conveyor belts; replacement of obsolete equipment in the company's Buffalo power plant; building improvements and re-arrangement of production machinery at Passaic; additional production machine tools at Passaic, and equipment for a new maintenance and repair center in Houston, Texas, for repairing hose used on oil well drilling equipment.

The company's research and development program covered a variety of projects in the conveyor and rubber fields. The program was carried on by the company's own researchers and by engineering and scientific organizations outside the company, particularly Pennsylvania State University and the Franklin Institute, whose services were employed under contract to investigate certain phases of belt and machinery design.

The largest single project, the report said, was the continuing study of new types of belt conveyors for long overland haulage of bulk materials. "We have made considerable progress since we undertook this development work several years ago," Mr. Robins said, "and it is believed that eventually we will be able to offer one or more new conveyor mechanisms that will radically alter existing concepts for handling bulk materials."

In a proxy statement accompanying the report, Mr. Robins and the board of directors asked the stockholders to authorize the issuance of 50,000 shares of $50 par value cumulative preferred stock. Of the total $2,500,000 par value to be authorized, it is planned to market only one-half at this time, the other $1,225,000 par value to be marketed in the future as needed. Under the present certificate of incorporation, the company is authorized to issue 500,000 shares of $5 par value common stock, of which 287,051 shares are currently oustanding. Mr. Robins said the new capital will be used to acquire additional properties and to increase working capital.

It was also proposed that the stockholders approve a stock option incentive plan to enable about 40 key employees to acquire a larger stock ownership in the company. The plan was recommended on the grounds that greater stock ownership by those who have primary responsibility for the financial success of the company will stimulate incentive and improve operating efficiency. Options would be limited to 14,000 shares of the $5 par value common stock, which is less than 5% of the total common currently outstanding, and the price would be 95% of "fair market value," which means the price prevailing at the time options are exercised.

Dayton Rubber Co.

Year Ended October 31: Net income of $1,602,203, which is equal to $2.57 each on 587,652 common shares outstanding, compared with $1,500,875, or $2.47 each on the 571,167 shares of common stock outstanding at the end of the 1952 fiscal year. Net sales in the 1953 fiscal year established an all-time company record of $57,922,461, as compared with the previous high of $54,602,954 in 1951 and $54,023,245 in 1952. As of October 31, 1953, total current assets were $31,670,000 and total current liabilities were $8,084,000. At the end of the preceding fiscal year, total current assets were $29,929,000, while total current liabilities were $6,960,000.

Farrel-Birmingham Co.

For 1953: Net income of $2,021,625, which is equal to $6.22 a share, compared with $1,935,655, or $5.95 a share. Net sales in 1953 totaled $47,016,700, against $43,986,659 in the previous year. Total current assets as of December 31, 1953, totaled $20,085,445, while at the end of 1952, total current assets were $19,759,733. Total current liabilities as of December 31, 1953, amounted to $9,809,891, against $9,660,658 at the end of 1952. The report covers the company and its wholly-owned subsidiary, the Consolidated Machine Tool Corp.

Mansfield Tire & Rubber Co.

For 1953: Net profit of $927,005, which is equal to $1.68 a common share, compared with $1,330,099, or $2.41 a share, in the preceding year. Net sales in 1953 amounted to $59,078,904, contrasted with $55,551,843 in 1952. The company reported that earnings in 1953 were adversely affected by interruptions in production operations caused by the tying-in of new manufacturing facilities, and by defense contract cancellations of more than $2,000,000, all of which were received in the second half.

Firestone Tire & Rubber Co.

Quarter Ended January 31: Net income of $9,416,027, which is equal to $2.36 a share, compared with $9,811,458, or $2.47 a share, in the quarter ended January 31, 1953. Results for the latest quarter were after providing a reserve of $466,000 for earnings of certain foreign subsidiaries which cannot be remitted. A similar reserve of $2,892,000 was provided for the quarter ending January 31, 1953. Net sales in the first 1954 quarter amounted to $218,190,068, contrasted with $233,347,706 in the first 1953 quarter.

Electric Auto-Lite Co.

For 1953: Net income of $10,567,391, which is equal to $6.73 each on 1,569,598 shares, compared with $9,789,494, or $6.55 each on 1,494,855 shares, in 1952.

American Hard Rubber Co.

For 1953: Net income of $102,474, compared with a net income of $237,783 in the preceding year. Sales in 1953 totaled $17,135,112, against $18,729,939 in 1952.

Raybestos-Manhattan, Inc.

For 1953: Net income of $3,361,506, which is equal to $5.35 a share, compared with $3,175,611, or $5.05 a share, in 1952. Net sales in 1953 amounted to $74,277,791, against $73,230,550 in the previous fiscal year. The net income does not take into account net earnings of the wholly-owned Canadian subsidiary, which, expressed in United States currency, amounted to $210,340 in 1953 and $171,612 in 1952. Balance sheet items of the company and its domestic subsidiaries as of December 31, 1953, showed total current assets of $27,976,091, and total current liabilities of $7,411,611. At the end of 1952, total current assets were $27,789,141, and total current liabilities were $6,911,542.

Brunswick-Balke-Collender Co.

For 1953: Net income of $265,530, which is equal to 32c per common share, compared with $714,662, or $1.32 a common share, in the preceding year. Net sales in 1953 totaled $31,852,429, against $26,627,741 in 1952.

Okonite Company

For 1953: Net income of $2,360,000, which is equal to $14.00 a share, compared with $2,124,000, or $12.59 a share, in the preceding year. Sales in 1953 totaled $54,500,000, contrasted with $53,145,000 in 1952.

Canada Wire & Cable Co.

For 1953: Net income of $2,088,294, which is equal to $10.17 per each Class B share, compared with $1,994,062, or $9.72 per each Class B share in the preceding year.

Jenkins Bros., Inc.

For 1953: Net income of $451,268, which is equal to $3.54 a common share, compared with $300,155, or $2.35 a share, in the preceding year.

Kerite Company

For 1953: Net income of $716,172, which is equal to $4.69 a common share, compared with $723,352, or $4.74 a share, in the previous year.

DeVilbiss Company

For 1953: Net income of $739,422, which is equal to $2.46 a share, compared with $902,239, or $3.01 a share in the preceding year.

Collyer Insulated Wire Co.

For 1953: Net income of $841,235, which is equal to $5.61 a share, compared with $1,280,382, or $8.54 a share, in the preceding year.

Garlock Packing Co.

For 1953: Net income of $1,268,751, which is equal to $3.03 a share, compared with $1,304,205, or $3.11 a share.

Minnesota Mining & Mfg. Co.

For 1953: Net income of $17,592,511, which is equal to $2.14 a common share, compared with $15,691,355, or $1.96 a share in the prior year. Sales in 1953 totaled $219,916,383, against $185,241,760 in 1952. Total current assets as of December 31, 1953, amounted to $96,525,119, against $87,903,501 at the end of 1952. Total current liabilities as of December 31, 1953, totaled $44,393,271, contrasted with $38,514,582 at the end of the preceding year.

St. Joseph Lead Co.

For 1953: Consolidated net income of $6,300,342, which is equal to $2.32 a share, compared with $9,638,455, or $3.55 a share, in 1952. Net sales in 1953 declined to $88,002,426 from $105,211,886 in the preceding year. Lower market prices for lead and zinc, which were caused by the large imports of both metals, had an adverse effect on earnings, the company reported.

Mohawk Rubber Co.

For 1953: Net income of $413,321, which is equal to $2.92 a share, compared with $683,658, or $4.83 a share, in the previous year. Net sales in 1953 amounted to $16,263,781, against $19,189,795 in 1952. Total current assets as of December 31, 1953, amounted to $4,110,628, while total current liabilities at the same time were $1,054,639.

Lee Rubber & Tire Corp.

Quarter Ended January 31: Net income of $261,123, which is equal to 94c a share, compared with $394,279, or $1.42 a share, in the January quarter of the preceding fiscal year. Net sales in the quarter ended January 31, 1954, totaled $9,047,976, against $10,337,242 in the quarter ended January 31, 1953.

Allen Industries, Inc.

For 1953: Net income of $1,078,300, which is equal to $1.93 a share, compared with $1,041,942, or $1.86 a share, in 1952. Net income in 1952 included $256,564 of non-recurring income. Net sales in 1953 totaled $32,650,026, while in 1952, net sales amounted to $26,475,152.

Columbian Carbon Co.

For 1953: Net income of $5,194,501, which is equal to $3.22 a share, compared with $4,336,582, or $2.69 a share, in 1952. Sales in 1953 totaled $52,195,791, a record high for the company, contrasted with $47,958,975 in the previous year.

General Cable Corp.

For 1953: Net income of $5,095,416, which is equal to $2.29 a common share, compared with $5,283,230, or $2.38 a share, in the previous year. Net sales in 1953 amounted to $116,518,859, contrasted with $116,352,000 in 1952.

An index to volume 74 of RUBBER AGE will be found on Pages 147 to 150 of this issue.

CANADIAN NEWS

Total volume of sales of the Crown-owned Polymer Corp. Ltd., reached an all-time high in 1953—and there is every likelihood of 1954 sales continuing the upswing, according to J. D. Barrington, president and managing director, in his annual report to the Canadian Minister of Defense Production, at Ottawa.

World consumption of rubber, notes the president, is estimated to be about 2,400,000 long tons, and the prediction is that it will reach 3,000,000 long tons by 1960. At present two thirds of the demand is met by natural rubber, and based on the experience of the last few years, it would appear unlikely that there will be any significant growth in natural rubber production for some time. Thus synthetic rubber must increase its production and sales in order to fill the gap.

In operation of the company for 1953, the president reported gross income from sales of $50,614,959. The rate of rubber production was 9% greater than in the 1952 calendar year. Net income for the year was $5,097,638, after providing $5,036,831 for depreciation, $4,946,000 for income tax, and $254,904 for debenture interest.

This represents an increase of 37% in net income per month over the rate established in the shorter fiscal period covered in 1952. Regular quarterly dividends of $2,000,000 were paid together with a special dividend of $1,000,000 declared at the year-end. In addition the company was able to retire $3,000,000 principal of 4% Serial Debentures, leaving $4,000,000 long-term debt outstanding.

Production showed an increase of 15,000,000 pounds of rubber over 1952. During 1953, the sixth steam boiler was put into operation and brought generating capacity to nearly 2,000,000 pounds per hour.

A novel solution to the storage problem of light hydrocarbons was the development of an underground storage cavern in a washed-out salt bed at a depth of 2,300 feet. It has an initial capacity of 55,000 barrels. In midyear a new research and development building was occupied and an addition to the administrative building was authorized and is now under construction.

Despite a decline of about one-third in the world price of natural rubber, Polymer was able to increase its sales volume by 13% above the average monthly rate established last year, and it is noted that market demands for Polymer products exceed production capacity.

Research and development is now a self-contained unit, and its facilities include a number of highly specialized installations, such as the electron microscope which greatly widens the field of study of the physical nature of the company's products. Among the achievements of this branch in 1953 was the development of latices for rubber-based paints which are stable through a wide range of temperatures.

A drop in net profit, from $315,000 in 1952 to $299,000 for 1953, has been reported by Dunlop Tire and Rubber Goods Co. Physical volume of sales was maintained or increased in most divisions, the report states, but dollar volume was lower and reduced prices of raw materials did not match the drop in selling prices.

Unit sales of the Automotive Division were the highest in the company's history, the report notes, and there also was an increase in volume of sales in the Industrial Rubber Products Division. Both unit and dollar sales increased in the Pliofoam Division.

The report indicates an expectation of increased sales this year—already supported by unofficial reports of higher levels in the opening months—in commenting upon increased factory activity and growth of inventory during the latter part of 1953 and inability last year to meet peak demand in full.

Expenditures on fixed assets, amounting to $674,000, included an improvement in facilities for manufacturing industrial products, foam rubber and automobile tubes.

The financial statement shows operating profit for 1953 at $1,062,182 against $1,190,488 the year before. Debenture interest at $150,000 was up from $138,466 and depreciation down to $439,667 from $77,939. Income from investments was up to $43,750 from $20,000. Provision for taxes at $217,000, compares with $279,000 the previous year.

The balance sheet shows current assets at $10,391,529 compared with $8,873,562 at the end of 1952. Inventories, which are included, are valued at $6,548,871 compared with $5,792,961.

Current liabilities, in which the major change is a bank loan of $1,100,000, are stated at $2,975,181 compared with $1,737,572 for the previous year, leaving working capital of $7,416,348 at the end of 1953 compared with $7,135,990 the year before. The report notes that a payment was received in December on overdue South American accounts and that the balance may be forthcoming soon.

Increased sales in Canada offset a substantial drop in export business and net profits rose 10% for Goodyear Tire & Rubber Co. of Canada in 1953, the annual report shows. Profit amounted to $4,797,204, equal to $17.48 a common share, compared with $4,337,795, or $15.69 a share in 1952.

Taxes of all kinds paid by Goodyear totaled $12,020,237 of which $3,872,542 was income tax. These taxes were equal to $46.72 a common share.

The report points out that excise and sales taxes totalling 25% are hidden in the price of a tire. If these taxes are deducted, there is little difference in selling prices of tires in Canada and the U.S.

Traditional export markets are handicapped by exchange restrictions, Canadian dollar shortages, increased local industrial development and steadily rising production costs in Canada, P. W. Litchfield, chairman, and R. C. Berkinshaw, president, state in the report.

It is to be hoped, the report continues, that with the threat of inflation diminished and consumers looking for a more realistic dollar value for their purchases that the Dominion Government will soon see its way clear to lower or eliminate the imposition of sales and excise taxes on tires and tubes.

Referring to the company's operations, the chairman and president report that last year's sales were about equal to the previous year with increased business in the domestic market approximately counterbalancing a substantial reduction in sales in the export field.

There does not appear to be much prospect, they state, of a radical change in the conditions presently prevailing in traditional export markets causing a curtailment in their purchases of Canadian-made products.

These conditions are listed as exchange restrictions; tendency for a fair volume of trade in manufactured articles to flow toward and within the sterling area; increased industrial development in these markets and steadily increasing costs of production in Canada.

Net capital expenditures last year amounted to $4,070,549. The expansion program started in 1951, involving erection of new factory buildings at nearby New Toronto, which was compiled and placed in operation in December. Some further extensions are now in process and are expected to be completed at an early date.

Goodyear introduced the all-nylon passenger tire, with sales exceeding expectations. Sales of industrial rubber goods continued high and further increases were reported in sales of special products.

Three new vice-presidents have been named by Seiberling Rubber Co. of Canada, Ltd., Toronto. They are W. Horace Mason, vice-president and secretary-treasurer; J. W. Ansley, vice-president, production, and A. P. Acheson, vice-president, sales. The board of directors was also increased from five to seven members during the annual stockholders meeting, with Messrs. Ansley and Acheson named to the board. All other directors were re-elected, including Messrs. Brown, Mason and M. C. Deans, all of Canada, and two officers of the parent company, J. P. Seiberling, president, and C. E. Jones, vice-president and comptroller.

Mr. Mason has been with the company as secretary-treasurer since June, 1952. Previously, he had been with the parent company 26 years and was manager of factory accounting before transferring to Canada. He is a native of England, but has spent most of his lifetime in Wadsworth, Ohio.

Mr. Ansley was one of the first men employed when the Canadian company was organized in 1927. He held various factory supervisory positions with the company and was factory manager when he received his latest promotion.

Mr. Acheson joined the company in 1932 as a salesman. Later, he was man-

ager of the Toronto sales branch, assistant sales manager and sales manager. Previously, he had been a salesman for another major rubber company in Canada.

Canadian industry gained another company with the beginning of operations of Manning, Maxwell & Moore of Canada, Ltd., in space leased from the Canada Machinery Corporation, Ltd. on Water Street South, Galt, Ont. According to officials of the parent company, Manning, Maxwell & Moore, Inc., whose executive offices are in Stratford, Conn., Galt was selected after a study of several Canadian locations because it best met the specific requirements of the new company. Various types of industrial products are to be manufactured. These include "Ashcroft" pressure gauges, "Consolidated" safety and safety relief valves and "Hancock" bronze and steel valves in gate, globe, angle, "Flo-control" and other types.

New officers, directors and operating personnel include Hamilton Merrill, president; Chester H. Butterfield and Colby M. Chester, 3rd, vice-presidents; Charles A. Moore, 3rd, treasurer; John A. Flynn, controller; Clark I. Scott, secretary and Thomas F. Cummings, assistant secretary, who are executives of the parent company.

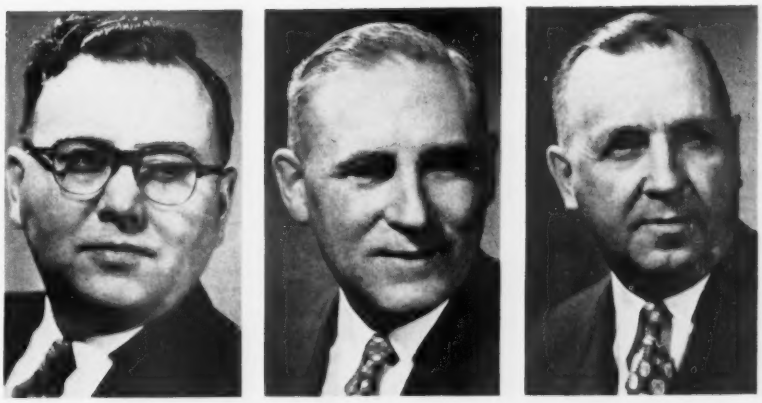
Gro-Cord Rubber Co. of Canada Ltd., was recently given the green light in its request to the ratepayers of Tillsonburg for a fixed assessment on building and property for the next 10 years.

Forest Moor, president of the Gro-Cord Rubber Co., Lima, Ohio, parent company of the Gro-Cord Rubber Co. of Canada Ltd., stated that the firm's new Canadian plant at Tillsonburg, Ont., now under construction, will enable the firm to increase its production.

R. C. Berkinshaw, president and general manager of the Goodyear Tire & Rubber Co. of Canada Ltd., of Toronto has been elected president of the Canadian council, International Chamber of Commerce.

Hobbs Opens New York Office

Opening of a branch sales office at 132 Nassau Street in New York City has been announced by the Hobbs Manufacturing Co. of Worcester, Mass. Sales and services in this New York office are under the direction of George B. Clay, who has been associated with the company for the past 10 years. Mr. Clay entered sales work from the production and supervisory fields. He has contributed actively to the development of Hobbs machines and is intimately acquainted with their construction as well as with their operation. Products that are being handled out of the New York office include: Hobbs Autotronic, "Adjustable Die," and Tri-Power Presses; Hobbs production cutters, power shears, corner cutters; Hobbs slitters and rewinders; Hobbs "Strong" label cutters; Jacques hand shears; and the Hobbs "Alquist" winders. In addition to this office in New York, Hobbs maintains a branch office in Chicago, Ill., at 549 West Washington Blvd., under the direction of Robert M. Lazenby.



W. H. Mason | J. W. Ansley | A. P. Acheson

Three new vice-presidents recently named by the Sciberling Rubber Co. of Canada, Ltd.

Koroseal Conveyor Belts

A new line of lightweight industrial conveyor belts, including Koroseal belts and others with an "eye-rest" green color for inspection service, has been announced by the B. F. Goodrich Co., Akron, Ohio. According to Robert V. Yohe, vice-president-sales, B. F. Goodrich Industrial Products Division, the new Koroseal belt has excellent resistance to abrasion, oils, grease and most acids. Mr. Yohe said that a new, scientifically tested "eye-rest" green color distinguishes new "Highseal" and "Kleenseal" belts from other belts designed for light industrial conveyor applications. The belts' pleasing shade of green is said to increase inspection efficiency by reducing glare and eye strain. Special belt surfaces make them easy cleaning. A new "Economy" black belt completes the line of lightweight conveyor belts. This belt is designed for low cost operation and to reduce maintenance problems caused by excessive changes in belt length. A new, lightweight conveyor belt fabric, identified by Goodrich as "C. P." special conveyor fabric, is used for the first time in the new line of belts. The fabric has high resistance to moisture when impregnated with special compounds and has long flex life even when operated over small pulleys.

Appointed Production Manager

George Schiller, formerly production superintendent of the Buffalo, N. Y., plant of the Restfoam Division, Hewitt-Robins Inc., has been promoted to the position of production manager. R. G. Zier has been named to succeed Mr. Schiller as production superintendent. Mr. Schiller joined the company in 1946 and became production superintendent in 1952. Before joining Hewitt-Robins, he was associated with Curtiss-Wright. Mr. Zier joined the Rubber Division of Hewitt-Robins in 1940. After service in World War II, he transferred to the Restfoam Division, later becoming general foreman of the Molding Department.

Exchange Overseas Assignments

Two Goodyear Tire & Rubber Co. technical men exchanged overseas assignments beginning April 1 for a three-month period. Allen O. Zimmerman, manager of tire compounding at Akron, has taken over the duties of John W. Denson, chief chemist at the company's plant in Wolverhampton, England. Mr. Denson has returned to the home offices for a refresher course in the firm's latest compounding developments. Mr. Zimmerman, a veteran of 37 years with Goodyear, has been continuously associated with tire compounding and research since joining the company. He started as a chemist, held several positions in compounding and development work and was named development manager at Goodyear's Australian plant in 1927. After five years in that post he returned to Akron in the research department, later was a tire compounder and was promoted to his present position just prior to World War II. Born in Ortonville, Mich., he is a graduate of Albion College and took graduate work in chemistry at the University of Michigan. Mr. Denson, a native of England, is a graduate of a technical school in that country and has extensive background in both chemistry and metallurgy. He started his Goodyear career as an electrician at the Wolverhampton plant in 1927. Promoted to the chemical laboratory about a year later, he was advanced to assistant chief chemist in 1946, then to his current post in 1948.

Witco Tank Truck Deliveries

Witco Chemical Co., New York, N. Y., has placed two new tank trucks in its plasticizer delivery service. These trucks are compartmented so that from two to four different plasticizers can be delivered at one time. One truck has two compartments of 1,000 gallons each while the second has four baffled compartments totalling 5,300 gallons. These new trucks make possible direct plant-to-plant delivery of plasticizers in fast time to any destination east of the Rockies, the company states.

Naugatuck Promotes Madsen

C. H. Madsen

Christy H. Madsen has been named production manager of the Naugatuck Chemical Division of the U. S. Rubber Co., according to a recent announcement. Mr. Madsen, formerly assistant production manager, replaces John C. H. Wendes, a veteran of 25 years with the company, who retired February 1. In his new post, Mr. Madsen will supervise all manufacturing and engineering operations of Naugatuck Chemical with plants at Naugatuck, Conn., Painesville, Ohio, Baton Rouge, La., and Los Angeles, Calif. He will also supervise the company-operated government synthetic rubber plants at Naugatuck and Port Neches, Texas, and the Kankakee unit of Joliet Arsenal at Joliet, Ill., which manufactures explosives. His headquarters will be at Naugatuck. A native of British Columbia, Mr. Madsen has a master's degree in chemical engineering from the University of British Columbia. He was in the Canadian synthetic rubber industry for six years before coming to Naugatuck Chemical, in 1949, to be manager of a synthetic rubber plant in Borger, Texas. He became assistant production manager in 1951.

Mr. Wendes, a native of Sweden, joined Naugatuck Chemical in 1928 as a development engineer. He held a number of posts, including operations manager for synthetic rubber production, before being appointed production manager for Naugatuck Chemical in 1950. He was a major factor in the development of the synthetic rubber industry in the United States. Mr. Wendes is a graduate of the Swedish Royal Naval Academy, and has degrees in mechanical and electrical engineering. He speaks nine languages, and during World War I used his knowledge of languages in intelligence work for the Danish, French and English governments. He is past president of the Connecticut Chapter of the Society of Professional Engineers, and also a member of the American Society of Mechanical Engineers.

M. Michel & Co., New York, N. Y., has released a newly-revised data sheet which shows typical analyses for 15 types of "Cachalot" brand fatty alcohols.

Creates New Operating Divisions

To provide more logical product grouping, better customer service and a suitable pattern of organization for expected future growth, the Pennsylvania Salt Manufacturing Co., Philadelphia, Penna., will establish two new operating divisions, President George B. Beitzel announced recently. These new components—the Industrial Chemicals and Chemical Specialties Divisions—will function as complete operating units responsible for both the manufacture and sale of their respective products. Other units already operating on this basis are the Pennsylvania Salt Manufacturing Co. of Washington, Sharples Chemicals Inc., and the Pennsalt International Corp. "This realignment," Mr. Beitzel explained, "will complete the company's decentralized organizational structure. The change-over will be made gradually during a period of approximately a year, and most changes will be at top and middle management levels."

Three major personnel appointments effective April 1st also were announced: William P. Drake, vice-president in charge of sales was named president of the Industrial Chemicals Division; Albert H. Clem, general sales manager, became president of the Chemical Specialties Division; and William F. Mitchell, formerly head of Pennsalt's manufacturing activities, becomes vice-president in charge of engineering, purchasing and traffic for the consolidated company.

More Materials Show Plans

Hundreds of new uses of materials for products manufactured by the nation's industrial plants will be considered and discussed at the second Basic Materials Conference, to be held at the International Amphitheatre, Chicago, Ill., concurrently with the basic Materials Exposition on May 17-20. Displays and conferences will cover not only materials which improve the utility or sales value of capital and consumer goods but also those materials which reduce production costs. Discussions will range from late developments in solving such problems as corrosion and methods of joining materials to forecasts of materials likely to be used by industry in the next ten years. One of the highlights of the program will be a study of materials currently being developed for manufacturing rockets and guided missiles to determine how such materials can be used for the whole range of peacetime products.

WHO MAKES IT?

Among inquiries received in recent weeks were those for the following items:

(1) Molded rubber bases for shower floors.

(2) Ping pong paddle facing.

If suppliers of these items will contact us, we will put them in touch with the original inquirers.

EDITOR

Allen Advanced By Cabot

R. G. Allen

The board of directors of Godfrey L. Cabot, Inc., Boston, Mass., have announced the election of Russel G. Allen as executive vice-president. He succeeds Thomas D. Cabot, whose election as president of the company was previously announced. Mr. Allen joined the Cabot organization in Texas in 1925, two years after his graduation from Haverford College in Pennsylvania. Following five years of service in the Southwest and in West Virginia, in 1930 he was placed in charge of the Southwestern Division with headquarters at Pampa, Texas. In 1943 he was transferred to Boston to become vice-president of Godfrey L. Cabot, Inc. He is also an officer and director of the following Cabot subsidiary companies: He is vice-president and director of Cabot Carbon Co., Pampa, Texas; director and chairman of the board of Cabot Carbon, Ltd., Liverpool, England; director of Cabot Carbon of Canada, Ltd., Toronto, Ontario; vice-president and director of Cabot Shops, Pampa, Texas; director of Cabot Engineering Co.; vice-president and director of Georgia Pigment Co., Sandersville, Ga., and vice-president and director of Herron Bros. & Meyer, Inc., New York, N. Y.

Albert Buys Crane Firm

S. L. Albert and associates have purchased the Browning Crane & Shovel Co. of Cleveland, Ohio, in a deal involving close to $2,000,000. Browning Crane has been operating under a referee in bankruptcy since December of 1953 at which time the company filed a petition of reorganization in Federal Court. The company is reported to have lost $900,000 last year. Cleveland advices said that Mr. Albert put up $725,000 in cash and a bond of $100,000 to guarantee fulfillment of the contract. He has taken over $900,000 in mortgage notes on Browning Crane equipment which must be repaid. Stockholders will receive about $90,000 for their interests, it was reported, which includes 4,514 common shares and 2,840 preferred shares. The Browning Crane plant has been operating with a skeleton crew for the past few weeks. The plant has 160,000 square feet of floor space and normally employs about 300.

IN SUBMARINES...

World's first atomic-powered submarine, the USS Nautilus shown being launched at the yards of the Electric Boat Div. of General Dynamics Corporation: It will dive deeper, travel faster under water and stay submerged for months without refueling.

Setting new standards of PROGRESS

IN THE RUBBER INDUSTRY...

Muehlstein, as it has for over forty years, continues to advance its standards of service as leading supplier to the rubber and allied industries through progressive business methods and constantly increasing efficiencies of operation.

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CRUDE RUBBER, SYNTHETIC RUBBER, SCRAP RUBBER, HARD RUBBER DUST, PLASTICS

LOS ANGELES NEWS

The March 2nd dinner meeting of the Los Angeles Rubber Group held at the Hotel Statler in Los Angeles, Calif., was sponsored by the Xylos Rubber Co. Preceding the dinner meeting, Floyd Burgner, safety director of the Firestone Tire & Rubber Co., addressed the group on "Safety in the Rubber Industry." Approximately 65 members and guests attended the meeting. Guest speaker of the meeting was Roy E. Weatherby who gave a lecture and showed a color motion picture of his "Safari Around the World—1953."

Firestone has announced the start of a safety campaign in cooperation with the Inter-Industry Highway Safety Committee, to help make Los Angeles' young drivers aware of good driving practices while using the family car.

Bob Reese, formerly associated with American Anode, a division of the B. F. Goodrich Co., has been named Western Division manager of manufacturers material sales of the parent company and, in this capacity, will be in charge of all American Anode sales. T. L. Graves succeeds Mr. Reese as manager of the American Anode plant in Los Angeles.

Ed Lynch, formerly associated with the Master Processing Corp., has joined the staff of the H. M. Royal Co.

The April 6th meeting of the Los Angeles Rubber Group which was to have been held at the Hotel Statler in Los Angeles, was to have featured a panel discussion on "Rubber Compounding and Processing Problems." C. R. Bigelow (Darnell) was to have acted as moderator for the discussion. Panel members were to have included Douglas Chalmers (Golden State Rubber), Floyd Price (Voit Rubber), A. F. Reznicek (Rubber Products Engineering), and C. E. Wilson (Pacific Molded Products). A full report on the panel discussion will appear in a future issue of RUBBER AGE.

Stanley J. Lerche has joined the W. J. Voit Rubber Corp. as camelback sales representative for Northern California.

The first Pacific Coast plant of the Witco Chemical Co. was opened during March in the Lynwood section of Los Angeles. Initial production will seek to meet the growing demand for Witco paint driers, but operations are planned eventually to include the manufacture of various organic chemicals. The plant comprises four modern factory buildings on three fenced acres, with open and covered storage facilities, and a railroad siding. Production at the new plant will be in charge of Arnold Hoffman, formerly associated with the company's plant at Chicago, Ill.

West American Sales Co., Los Angeles, has been appoined California representative for several of the major products of the Vulcan Rubber Products Co., Brooklyn, N. Y.

Raymond H. Dobberfuhl has been appointed manager of the new R. & J. Dick Co. office and warehouse for the Southern California area.

Bauer & Black, a division of the Kendall Co., will move into a new $250,000 building in San Jose, Calif., by early summer. Increased volume of business made the new plant necessary, company officials said. Until the move has been completed, Bauer & Black's present branch in San Francisco, Calif., will continue to handle the West Coast business.

In a move designed to substantially expand present manufacturing, warehousing and shipping facilities, the W. J. Voit Rubber Corp. of Los Angeles has announced the purchase of a 165,000 square foot building at 2945 East 12th St. Company officials revealed that the purchase price was in excess of $700,000, and said that planned improvements will bring the investment over the $1,000,000 mark.

Plans call for the newly-acquired building, which was purchased from the Crown Zellerbach Co., to be used primarily for warehousing and shipping operations, and as the headquarters for sales and administrative personnel. Finishing operations on certain of the company's rubber and rubber-covered athletic equipment will also be conducted at the new site.

Acquisition of the building, which covers almost five acres and which contains 8,000 square feet of office facilities on the second floor, is part of an over-all company expansion plan which began two years ago with the purchase of a plant in Portland, Ore., and continued last year with the leasing of a 45,000 square foot manufacturing and warehousing facility in Danville, Ill.

Shown above is a view of the new 165,000 square foot building recently purchased by the W. J. Voit Rubber Corp. in Los Angeles, Calif.

Koppers Polystyrene Foam

Koppers Co., Pittsburgh, Penna., has introduced a new type of polystyrene material, which promises to open new markets for the plastics industry. The new material, a foam-type plastic, is described as an improvement over similar products in that, like pop-corn, it expands or bursts into light, fluffy, snow white masses when heated in containers or molds. The material can actually be "popped" into various shapes and sizes in heated molds in a single operation. It is claimed to have advantages over traditional insulators such as cork, mineral wool and the newer glass fibers. It is also reported to be exceptionally buoyant and can readily be molded into shapes for marine use. The material comes in the form of tiny, hard beads of polystyrene plastic. When impregnated with a special foaming agent, the plastic reacts under heat somewhat like the moisture within a kernal of popcorn. The density of the molded piece can be controlled by regulating the amount of material placed in any given mold. Thus, while a mold can be filled by using the plastic beads in quantities that will fluff up to a weight of only 2 pounds per cubic foot, moldings can be made in densities up to 10 pounds per cubic foot if great tensile and comprehensive strength is desired.

Goodrich Tread Machine

A cross-cutting and regrooving machine that in 4½ minutes can give standard design tires new skid-resistant treads of the type now used on the "Life-Saver" tubeless tire has been developed by the B. F. Goodrich Co., Akron, Ohio. The machines are in production and many have been delivered to company dealers and retail stores. The new machines are capable of duplicating the cross-cutting pattern on the company's Life-Saver tubeless tires, and are "the most versatile and effective non-skid creating equipment in the tire industry," the company said. This tread consists of more than 10,000 tiny blocks of rubber, spaced 16 to the inch, a quarter of an inch deep. Skid defying treads can be put on new and recapped tires as well as on somewhat worn tires, the firm said. Although the machine can be set for an infinite number of spacings and depths, the company's engineers have developed and recommend basic cross-cutting patterns which, it was said, provide positive skid protection.

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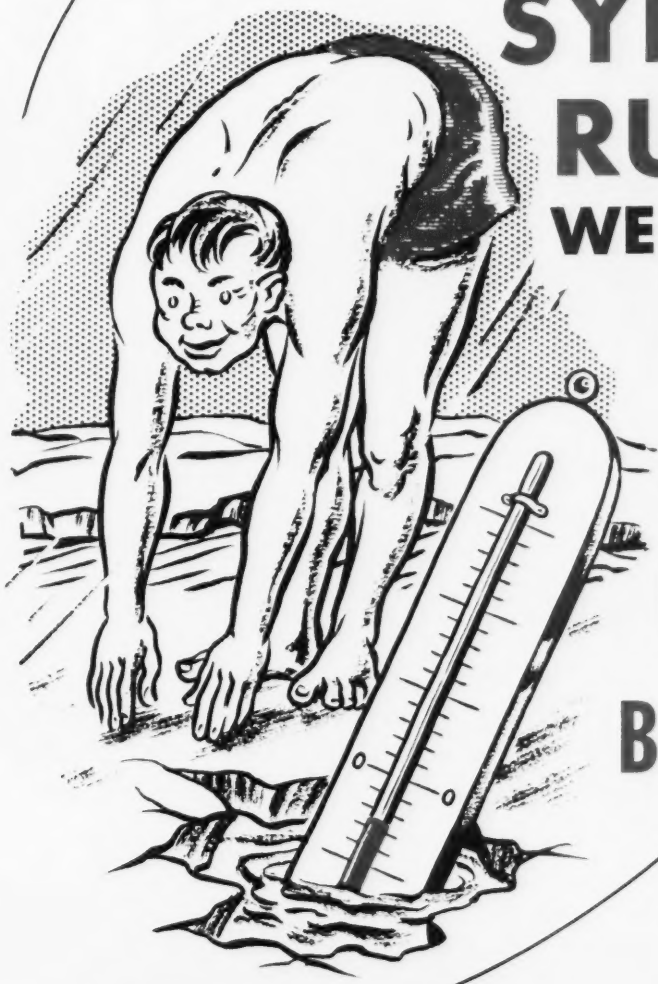

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OBITUARIES

Arthur B. Newhall

Arthur B. Newhall, a former executive vice-president of the B. F. Goodrich Co., and Rubber Coordinator for the War Production Board during World War II, died recently at his home in Framingham, Mass. Mr. Newhall came to Goodrich in 1929 when that company acquired the

Hood Rubber Co. He had started with Hood Rubber in 1917, moving up from purchasing manager to general manager and finally, president. At Goodrich, Mr. Newhall was in charge of all production and sales. He became a director and executive vice-president in 1938. In 1939, Mr. Newhall became chief executive vice-president of the Talon Fastener Co. of Meadville, Penna., and later chairman of the board of the Cambridge Rubber Co. Born in Lynn, Mass., in 1894, he was graduated from Tufts College with a degree in mechanical engineering. He was a director of the Rubber Manufacturers Association. Donald Nelson, former head of the War Production Board, said that Mr. Newhall was "one of the unsung heroes of World War II". Mr. Newhall's constant struggle to build government synthetic rubber plants also won for him praise from top government officials.

Roy P. Funkhouser

Roy P. Funkhouser, president of the Victor Products Corp., Conshohocken, Penna., vice-president of the Victor Products Co., Hagerstown, Md., director of the O'Sullivan Rubber Co., Winchester, Va., and a director of the Funkhouser Co. of Hagerstown, died on March 15 at Gettysburg, Penna. He was 67 years old. A native of Sleepy Creek, Va., Mr. Funkhouser came to Gettysburg 41 years ago.

Sir Sydney Palmer

Sir Sydney Palmer, one of the outstanding figures in the natural rubber industry, died unexpectedly on March 9 at his home in London, England. Sir Sydney has visited the United States a number of times and was last here in August, 1953, at which time he conferred with leading figures in the American rubber industry. Sir Sydney had just returned from a three-month inspection tour of Malaya and other countries in Southeast Asia, where he had large rubber interests. In the course of his business career, he held practically every important post his industry afforded. A practical planter of over 49 years experience, much of his life was spent in Southeast Asia. For over 20 years he was a planting member of the State and Central Legislative bodies in Malaya. For many years, he was chairman of the United Planting Association in Malaya. He retired from Malaya in 1949, and subsequently became vice-chairman and then chairman of the Rubber Growers Association in London. In addition, Sir Sydney had been a director of a number of rubber companies, chairman of the British Rubber Development Board, a director of the British Rubber Producers' Research Association, a member of the Colonial Office Labor Advisory Committee, and a member of the Committee of the Association of British Malaya.

Matthew J. Stacom

Matthew J. Stacom, vice-president in charge of research for Stacom Industries, Inc., Long Island City, N. Y., died at his home in Flushing, Queens, N. Y., on February 24. He was 63 years old. Mr. Stacom was known as the inventor of the "Stacomizer", a machine used for the extraction of rubber from guayule as well as for the extraction of cellulose from wood pulp. During his career, he devoted many years to research in methods of extracting the wealth from plant substances. In 1937, his device, then called the "horn-angle" machine was first demonstrated. It made possible the extraction of large quantities of pure cellulose from trees and plants which previously had yielded none. Mr. Stacom was founder and owner of the company which bore his name. He leaves his wife and two sons.

Paul O. Abbe

Paul O. Abbe, president of Paul O. Abbe., Inc., grinding and mixing equipment manufacturing concern of Little Falls, N. J., died on March 10 at his home in South Orange, N. J. He was 74 years old. Mr. Abbe was born in Berlin, Germany, and came to this country in 1886. He introduced the continuous feed and discharge types of pebble mills in the cement industry and the extraction of rubber from guayule shrubs by grinding.

Robert E. Roseveare

Robert E. Roseveare, formerly associated with the Goodrich International Rubber Co. at Manilla, and hero of the battle of the Philippines in World War II, died on March 5 at an Army sanitorium at Belmont, Calif. Mr. Roseveare, a reserve officer, never fully recovered from the privations suffered during the siege of Corregidor, the Bataan death march, and subsequent years as a prisoner of the Japanese. Mr. Roseveare, then living in Manilla as assistant general manager of Goodrich International, was in uniform as an Army lieutenant only hours after the attack on Pearl Harbor. He was promoted to major during the fighting and won the Silver Star for gallantry in action. He was held prisoner until February, 1945, when he was liberated by a daring commando raid. After the war, he returned to his old post at Manilla for a short time, but then retired on full disability pension. He is survived by his wife.

Dan M. Rugg

Dan M. Rugg, vice-president of the Koppers Co. and widely-known for his work in helping build up the nation's synthetic rubber industry, died on March 28 in Pittsburgh, Penna. He was 64 years old. An ardent sailing enthusiast, Mr. Rugg had planned to retire in a few months to spend much of his time aboard a vessel he purchased only last year. He had been with Koppers since 1926. In 1946, he was named vice-president and general manager of the Chemical Division. He was a past president of the Eastern States Blast Furnace and Coke Oven Association.

Goodrich Indiana Operations

According to C. O. DeLong, president of the B. F. Goodrich Co. Industrial Products Division, manufacturing operations will soon begin in a newly-acquired plant in Salem, Ind. The modern plant, formerly occupied by the Ric-Wil Co. of Barberton, Ohio, will employ about 150 persons and will produce gaskets used principally in refrigerator manufacturing. The factory building in Salem is of brick and steel construction and has 28,500 square feet of floor space on a 44-acre tract. The building was completed in 1952. The new factory will represent the first manufacturing operation in Indiana.

Carroll Appoints Pauls

R. E. Carroll, Inc., Trenton, N. J., has announced the appointment of Paul J. Pauls, Inc., Plainfield, N. J., as its exclusive export-import agent for all countries. Paul J. Pauls, Inc. has been in the export business for thirty years and currently represents some of the major chemical companies. Paul J. Pauls, Inc. is currently marketing "Solarite Resin No. 11," a rubber-like resin, for R. E. Carroll, Inc.

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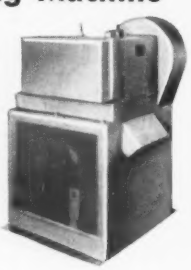

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NEW GOODS

Orcoflex Auto Floor Mat

A colorful new automobile floor mat called "Orcoflex," that is said to absorb more than 40 times as much passenger wear and tear, is being introduced by the Ohio Rubber Co., Willoughby, Ohio. These wearability qualities, plus more color brilliance and a greater color range, are obtained by spraying rubber with a special compound developed by the Empire Varnish Co. of Cleveland, Ohio, using Geon vinyl latex. Some major automobile manufacturers are placing the colorful mats in their 1954 lines, and many other auto makers have them under test for 1955. Tests have been made since July, 1952 in cooperation with owners of a large fleet of taxicabs to determine the comparative wear resistance of more than 100 different coatings. The cabs averaged about 7,500 miles each per month with a daily average of about 40 passengers per cab. Since this created service conditions at least 10 times as severe as in a private car, relative wear factors were developed in a few months. Over 2,000 tests were conducted by Empire Varnish and Ohio Rubber chemists over a period of 2 years to develop a coating and floor mat that would not only provide more brilliant and longer-lasting colors, but would wear better while resisting the effects of oil and grease, water, and chemicals. The Geon-coated Orcoflex mats can be easily cleaned with soap and water.

Polyethylene Baby Bottle

Squeezit Corp., West 177th St. and Harlem River, New York 53, N. Y., has introduced a new baby bottle made of polyethylene. Called "Nevabreak", the bottle is odorless and tasteless and has a wide neck to simplify

cleaning. Raised, easy-to-read graduations in both English and metric scales simplify the reading of milk or water volume. The bottle is unbreakable, and guaranteed to withstand heat, steam or pressure. Popular size nipples and plastic rings will fit the new bottle.

Diamond Marked Golf Ball

U. S. Rubber Co., New York, N. Y., is introducing a new golf ball with diamond cover markings that promises to add ten yards to the golfer's drive. The new ball, according to the company, will give greater distance in cold weather, in hot weather, against the wind and with the wind. It also looks whiter, stays whiter in play and washes up easily. Secret of the ball's improved performance is said to be the revolutionary new diamond markings on the cover. "Our diamond cover markings are the result of three years' intensive work by our development and engineering experts who applied the principles of aerodynamics to get greater lift and carry to our golf balls," company officials said.

The new diamond marked ball is now being made in the U. S. Royal Special and the U. S. Royal brands that are sold by golf professionals at golf clubs across the country. It is a legal tournament golf ball that meets the required specifications of the United States Golf Association, 1.68 inches in diameter, 1.62 ounces in weight, with an initial velocity of 250 feet a second. It has a tough, thin, fully cured Cadwell cover, the famous silicone center and electronic winding for long, true flight and uniform performance. Balls are packed in threes in an electronically sealed plastic covering that protects them till they are played. Each can be removed from its covering, leaving the other two balls protected against dirt and discoloration until needed for playing. Each ball has a strong plastic tear-off strip, making it easy to remove from its individual plastic sphere covering.

One-Piece Plastic Wheel

Production of a one-piece plastic wheel for low speed application on mobile equipment has been announced by Northwest Plastics, Inc., 65 Plato Ave., St. Paul, Minn. Designed for a 6 x 1.50 semi-pneumatic tire, the wheel is of Kralastic material and is molded in such a manner that there are no sharp edges to damage the tire when being mounted. The wheel is available in eleven standard colors, according to the manufacturer, and will meet rigid requirements both from the standpoint of strength and durability. It is recommended for use on rotary-type lawn mowers, mobile shop equipment and other low speed portable units. Color pigmentation is mixed in the plastic before molding providing a uniform coloring throughout the finished wheel, the manufacturer states. Bore size on the hub is half inch—either with or without a bronze bearing. The wheel is obtainable with a bore length of 1⅜ or 1½ inches. Advantage of this type of unit is in its low cost, weight and one-piece construction, the manufacturer says.

Ski-Hi Rainbow Balls

A new ball made of vinyl plastic has been introduced by the Irwin Corp., 200 Fifth Avenue, New York 10, N. Y. The company states that air will stay inside these balls far longer than in any ball previously made. Called "Ski-Hi Rainbow Balls", they are said to be very light. The colors of the ball are processed into the vinyl, thus the patterns will hold for the life of the ball. The balls are said to have a bounce of almost 100%.

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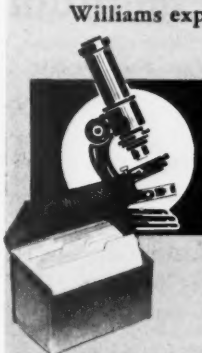
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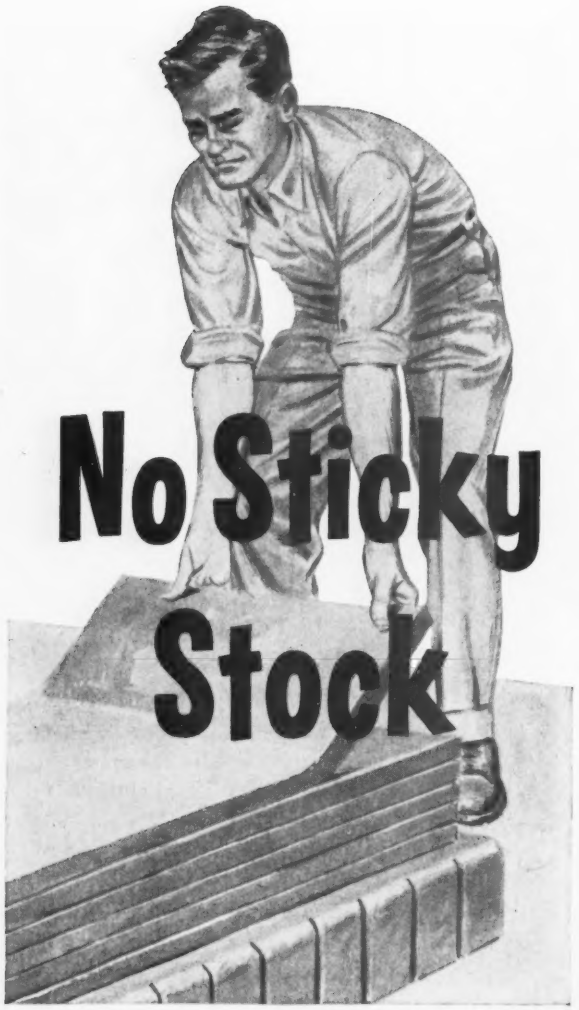

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Foot-Ease Sponge Matting

Sponge rubber matting to prevent foot fatigue for people whose jobs keep them on their feet all day has been developed by the Mechanical Goods Division of U. S. Rubber Co., New York, N. Y. Called "Foot-Ease," its two layer construction of sponge rubber protected by a tough rubber cover is designed to cushion the effects of concrete, tile, or similar floors. It is expected to help substantially in preventing tired feet and possibly serious foot trouble among workers. A recent survey has indicated that 70% of all industrial workers slow down production periodically as a result of foot fatigue. The new matting will be made in both a ribbed and a pyramid surface to insure safe footing. It will be sold in 25-foot lengths, 36 inches wide so that it can be easily cut to fit any area. The new "Foot-Ease" matting may be used in most places except on wet or oily surfaces, where the sponge would tend to absorb oil or water. U. S. Rubber development engineers are now attempting to develop an oil-resistant rubber matting of the same quality.

Spike Resistant Golf Matting

Spike resistant matting for golf clubhouses and caddy shops which will last four to five times longer than conventional matting will soon be introduced in five different colors by the U. S. Rubber Co., New York, N. Y. Tested for the past two and one-half years at several prominent clubhouses throughout the country, the matting shows no marks, rips or cuts in spite of continuous heavy usage. It is made of a combination of

natural and synthetic rubber so compounded as to produce an unusually tough material. The new colored matting, ¼ and ⅜ inches thick, will come in red, blue, green, gray and brown. It will also be made in black as it was when originally developed in the laboratory. It will be available in widths up to 84 inches and in lengths up to 16 feet in four different surface patterns: smooth, pyramid, corrugated and cloth impression. In addition to its safety advantage because of its non-skid surface, its extra tough rubber layers protect tile, wood or any other permanent flooring from damage.

Vinyl Heel Guards

A novel, yet useful preventative aid against high heel scuffing while milady drives the family car has been introduced by the Hilde-Gardes Co., Los Angeles, Calif. The devices are heel guards made from Geon vinyl plastic. Easily slipped on and off in a second, these patented heel guards protect against scuffing, scraping and soil spots resulting from resting the heel against the floor

mat when the foot is on the accelerator. The Hilde-Gardes come in two styles—one for high heels and the other for Cuban heels. They may be obtained in a transparent model or in a choice of five colors: black, white, red, brown and blue. The heel guards resist the effects of oils, greases, chemicals and water stains; they are easily cleaned with warm water if soiled by mud or dirt.

Krene Dinette Ensemble

A decorative floral stripe pattern, delicate colors, and soft weave textures are united with a new ease of cleaning by Krene vinyl film fashioned for kitchen or dinette by Weiss & Klau Co., 462 Broadway, New York 2, N. Y. The attractive floral motif on a background of

vertical stripes printed by Toscony is protected by an overlayer of clear Krene and embossed to look and feel like satin-taffeta. Table covers, curtains, chair and seat back covers and shelf covering are all available. The material is also available in yard goods for the home decorator.

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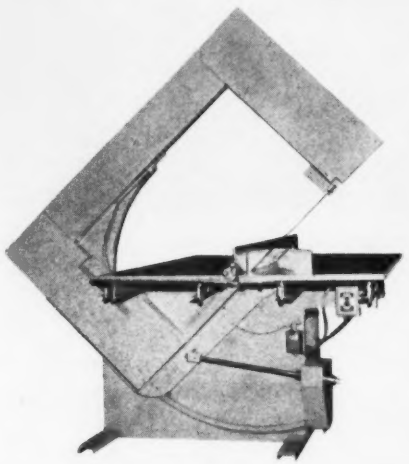
NEW EQUIPMENT

Edge Foam Rubber Band Machine

A new cutting unit designed and built especially for the cutting of foam rubber and similar material, which is said to enable the rubber fabricator to cut any shape and size from the smallest strips of edging to a full mattress size quickly and easily, has been introduced by the Frank Edge Saw Manufacturing Co. of Grand Rapids, Mich. Called the Edge Foam Rubber Band Machine, the unit cuts smooth and straight, even to strips as narrow as ¼-inch. According to the manufacturer, there is no ragged cutting, pulling, tearing or



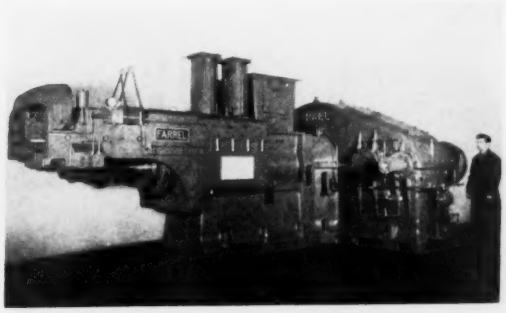
dragging down through the table, thus making usable quantities of narrow strips that have heretofore been considered waste. Straight even cuts also assure perfect cement joints with no wasteful buffing operations.

The frame of the new Edge cutting unit is of welded steel, and is equipped with 12-inch ball-bearing, rubber-tired aluminum wheels. The cutting table, of mahogany or birch veneer, is mounted on ball-bearing rollers, and handles material up to 80 inches in length, 60 inches in width, and 30 inches on either side of the cutting blade, with a forward and backward travel of 78 inches. A crank-operated adjustable cutting fence can be set quickly and easily to make any desired width of cut. The cutting blade itself is of saber tooth design.

An outstanding feature of the unit is a power-operated, automatic tilting cutting blade assembly which enables the operator to cut any angle desired from perpendicular to 45 degrees. This feature makes for a saving of time and ease of operation, and eliminates numerous costly jigs and fixtures. The parts to be cut lay in a flat position at all times. The table moves forward and backward past the cutting blade and guide, which is set on a graduated dial at the angle desired. Exceptionally large cuts can be made. When set on perpendicular, 23-inch material will pass under the top guide, and when set at 45 degrees, 17-inch material can be cut. The tilting assembly drive is powered by a ¼ h.p., 1750—220/440, 3-phase, 60-cycle motor through speed reducer and chain drive.

Heavy-Duty F-B Extruders

Two new heavy-duty extruders, both capable of easily handling full output from short-cycle Banbury mixer operation of 1½ to 2½ minutes, were recently developed and introduced by the Farrel-Birmingham Co., of Ansonia, Conn. One of these is a 15-inch unit for use with the No. 11 Banbury, and the other is a 20-inch unit for use with the No. 27 Banbury, the latter having a batch capacity approximately twice that of the



No. 11. Operation of these extruders is entirely automatic and adequate cooling is provided so that most stocks are at no higher temperature when discharged from the extruder that when discharged from the Banbury mixer. Extrusion is through a circular die and the stock is slit at the die exit to form a continuous slab which can be cut to desired lengths. The 15-inch machine extrudes a slab of approximately 50 inches in width, while the 20-inch unit produces a slab about 60 inches wide.

A design innovation in the new heavy-duty extruders is a retractable cone, operated by an air-hydraulic system, which facilitates rapid, automatic cleanout. A hydraulically-operated locking device keeps the cone in positive operating position. Gauging blocks of different thicknesses, which are mounted on the carriage, are used to adjust the die opening. An electric eye in the feed hopper actuates an air-operated clutch in the drive to stop the machine when the hopper becomes empty between batches. This keeps the screw always full of stock, so that the slab discharged is uniform and unbroken. When a conveyor is employed to carry away the extruded slab, this electric eye can also be used to stop the motion of the belt when the machine stops, the company states. An overall view of the 15-inch unit is reproduced herewith.

Nu-Jett Pencil Grinder

Added safety has been built into the Nu-Jett Pencil Grinder, the 100,000 r.p.m. grinder made by Nu-Jett Products of Grand Rapids, Mich. The newest model has a safety guard which fully encloses the chuck nut, thus making finger burns impossible and giving more accurate control. Nu-Jett is the smallest and lightest grinder on the market and because of its speed it can etch, grind, polish and deburr. It finds special application in the rubber field for the finishing of fine molds, the concern states.

If you are looking for answers to your rubber and plastics equipment problems, you will find them at EEMCO. Yes, they offer smoother sailing on many production problems with the machines which bear the EEMCO trademark. Skillfully designed by qualified engineers—and made by workmen with many years of experience—they offer the utmost in quality, design and workmanship. Serving manufacturers throughout the world, EEMCO rubber and plastics processing machines have proved their worth. EEMCO has its own Foundry, Machine Shop, and Engineering Department to insure fast delivery. Get prices and delivery dates from EEMCO where only the best has been built for many years.

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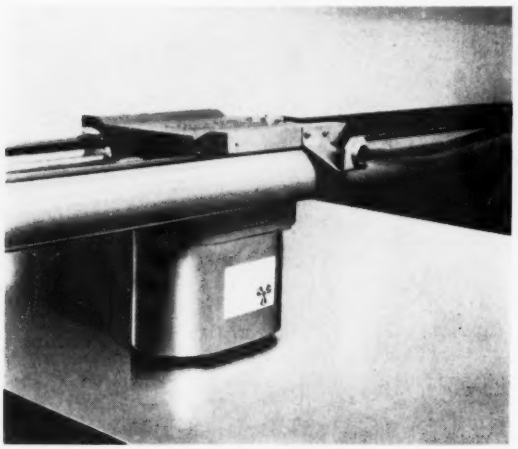
Reflection Type AccuRay Gauge

A new AccuRay beta gauge designed for measuring the thickness of coatings on base materials or the thickness of sheets passing over a roll has been announced by Industrial Nucleonics Corporation, Columbus, Ohio. Developed to give accurate thickness readings where conditions or type of application make measurement from one side of the sheet both practical and feasible, the non-contacting Model RBM is a reflection gauge slated to serve such applications as rubber, plastics and paper passing over a roll.



The basic components of the reflection type AccuRay gauge are a source of radiation, a radiation detector, and a recording console. Working principle of the gauge is based on the fact that a certain percentage of high speed electrons emitted from a source above the base material will reflect back into the detector unit. When a coating is applied to the base material, the amount of reflected radiation will change. Variations in coating thickness cause variations in the amount of radation entering the detector. These variations are measured and expressed on the AccuRay recorder in terms of weight per unit area or thickness. The material being measured, the sensitivity required, and the type of base material will determine the weight range attainable.

The source of radiation and the radiation-detecting unit are enclosed in a cast metal housing which traverses the width of the sheet on precision-ground steel tubes. Designed for heavy industrial use, these twin steel support tubes are capable of spanning sheets up to 160 inches in width. An electrical servo mechanism accurately positions the measuring head across the sheet.

Like AccuRay direct transmission gauges, the new unit features an exclusive automatic standardization cycle which periodically enables the gauge to compensate for error-producing variables such as changing ambient conditions, circuit variations, and source decay. Additional equipment includes a continuous scanning mechanism, a weld protection unit, and a summation computer for totaling combined weights, when gauges are used to measure coatings on both sides of the sheet.

Need a personal copy of RUBBER AGE? Use the coupon on page 144.

Schaefer Heavy-Duty Cementing Machine

Schaefer Machine Co., 51 Carbon St., Bridgeport 5, Conn., has announced the development of a new, heavy-duty cementing machine. The new unit has 42-inch wide rollers and will cement sheets of practically any material, including foam and sheet rubber up to 6 inches in

thickness, as well as paper, fiber, cloth, leather and plastic. It will one-side cement a sheet 40 inches wide by 8 feet long in 10 seconds, according to the manufacturer. Among the new features of the rugged, mobile unit is a hydraulic tank-lift device for easy access and cleaning. The unit can apply latex, rubber cement, animal glue or resin glue to controlled coating thickness. Cementing units made by the company are also available in 16, 22 and 30-inch wide rollers.

High Temperature Revolving Joint

A new high temperature revolving joint that can be bracketed and mounted with solid piping has been introduced by the Rotherm Engineering Co., Inc., 7280 West Devon Ave., Chicago 31, Ill. The new joint is manufactured with the stationary or rotating syphons with left or right hand threads and is said to be capable of handling temperatures up to 550 degrees at 300 pounds steam pressure. It is made in sizes from 1¼-inch to 5 inches. The joint is also made in the self-contained type that requires no mounting bracket. The new joints will also handle air and hydraulic pressures.

The French Rubber Journal

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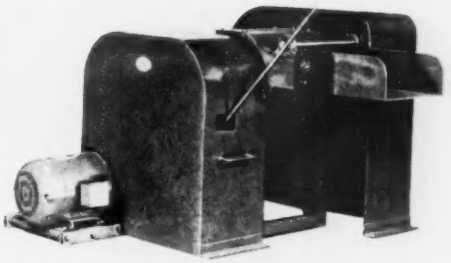

A rubber sole manufacturer wanted to cut extruded stock prior to feeding it into the forming presses.

The blanks had to be exactly uniform in shape and size. Too little or too much stock would result in imperfect soles or wasted material.

So a Taylor-Stiles cutter was used to cut exact sections from precut strips of the proper thickness and width assuring blanks with the required weight of stock.

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Our engineering staff will be glad to consult with you regarding a machine to cut your molding blanks, or will be glad to make available to you our 80 years of experience in solving cutting problems in many fields.

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REVIEWS

BOOKS

Materials and Processes. (Second Edition). By James F. Young. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 6 x 9 in. 1074 pp. $8.50.

The first edition of this work, published in 1944, was intended to present in one volume a broad study of the materials and manufacturing processes employed by the design engineer, and thus to provide information directly useful in the selection of materials for design. This intention was realized and the book received a warm welcome, not only by practicing engineers and designers but by colleges and universities, many of which adopted it as a text book. Expanded by 50 percent and brought completely up-to-date, this second edition includes a thorough coverage of the developments of the last ten years, incorporating recent advances in physical metallurgy and chemistry, useful material property data and process tolerances, latest industry practices, and an inclusive summary of the topical literature.

The book is divided into two sections, one on materials and the other on processes. Among the many materials treated in separate chapters are the pure metals, alloys, iron and steel, non-ferrous metals and alloys, non-metallic materials, plastics, rubber and ceramics. Processes covered include casting, powder metallurgy, heat treating, hot and cold working, welding, machining and plating. A special chapter is devoted to statistical methods useful in industrial quality control. Only 13 pages are devoted to the chapter on "Rubber", but brief sections cover milling, vulcanizing, extruding, calendering, molding, and lathe and die cutting. A table comparing the properties of natural and synthetic rubbers is included in this chapter. The book has 24 chapters in all and a subject index. Review questions appear at the end of each chapter.

•

Natural Rubber Latex and Its Applications. No. 3. The Manufacture of Dipped Rubber Articles from Latex. By Lucian Landau. Published by the British Rubber Development Board, Market Buildings, Mark Lane, London, E.C. 3, England. (Available from the Natural Rubber Bureau, 1631 K St., N.W., Washington 6, D. C. 5½ x 8½ in. 60 pp.

As indicated by its title, this third manual on latex applications in the series currently being compiled and issued by the British Rubber Development Board is devoted to latex dipping processes. In clear, concise terms the author first discusses general aspects, advantages of latex, raw materials and compounding ingredients, and then outlines the standard dipping procedures, including straight dipping, dipping with the aid of coagulants, the zinc-ammonia complex and heated formers, and the electrodeposition method. In turn, he then outlines the after-treatment of latex deposits, equipment and formulations.

Twenty-nine illustrations are utilized in the 60-page book, including three beautiful color plates, one showing latex-dipped balloons decorated by printing or spraying, other balloons of the variegated type, and the third a number of inflated novelties. Also included is a special 15-page section covering abstracts of the more important British patents relating to latex dipping processes and machinery, covering the period from 1922 to 1949. The manual includes author and subject indexes, and in general continues the excellent tone established in the preceding two booklets. These covered the origin, properties and manufacture of latex and latex casting, respectively.

Another copy of RUBBER AGE needed in your office? Why not enter a personal subscription? Use the handy coupon on page 144 of this issue.

BOOKLETS, CATALOGS, etc.

Conveyor and Elevator Belting: Splicing and Repair. B. F. Goodrich Co., Akron, Ohio. 8½ x 11 in. 32 pp.

This illustrated manual tells how to splice and repair conveyor and elevator belting. A series of 42 photographs are used to illustrate, in step-by-step fashion, proper belt splicing procedure. The manual describes splicing materials, tools needed, the best conditions for splicing and repair, method of splicing cord and fabric belts and special procedures in splicing rayon belts. Detailed instructions in on-the-job vulcanizing of splices by means of portable vulcanizers are also included. One section, covering major and minor repairs to conveyor and elevator belts, tells how to replace plies in the belt carcass and how to vulcanize the repair. The use of "Quick-Lock" temporary repair material is described in detail. A description of vulcanizing equipment and a chart showing quantities of splicing materials needed for any specified job are other features of the manual. The correct types of splicing or repair material needed for work on Hycar or other synthetic belt rubbers are specified in one of a series of new tables developed especially for this manual.

•

Quick-Opening Doors for Pressure Vessels. (Bulletin No. 2435). Process Equipment Division, Blaw-Knox Co., Pittsburg 22, Penna. 8½ x 11 in. 8 pp.

This bulletin outlines the advantages of the company's recently-developed quick-opening doors. It is stated that these doors can be opened or closed in seconds instead of minutes, thereby cutting production time in many processes. Designed for adaptation to both vertical and horizontal units, these doors range in size from 3 feet inside diameter to 12 feet. Standard units are being used at temperatures up to 400° F. and at pressures as high as 300 pounds per square inch and also at vacuums as low as 5 microns. Specially designed doors, the bulletin points out, can be used at temperatures above 400° F. These units can be furnished as part of a complete fabricated vessel or can be welded to an existing vessel or curing chamber.

•

Indonex Plasticizers in Oil-Resistant GR-S Compounds. (Circular 13-48). Indoil Chemical Co., 910 South Michigan Avenue, Chicago 80, Ill. 8½ x 11 in.

Latest in a series of technical bulletins covering the use of Indonex plasticizers, this publication covers the use of these plasticizers in oil-resistant GR-S compounds. The formulation of test compounds using 0 to 25 parts of Indonex 637½ per 100 parts of GR-S 1708 is shown in tabular fashion. Other tabular data offered includes physical test data on these compounds for a series of five cures, as well as a comparison of Indonex and other process oils. Other data presented include results obtained in oil immersion tests and such matters as compression set, weight loss on oven aging and Mooney viscosity.

•

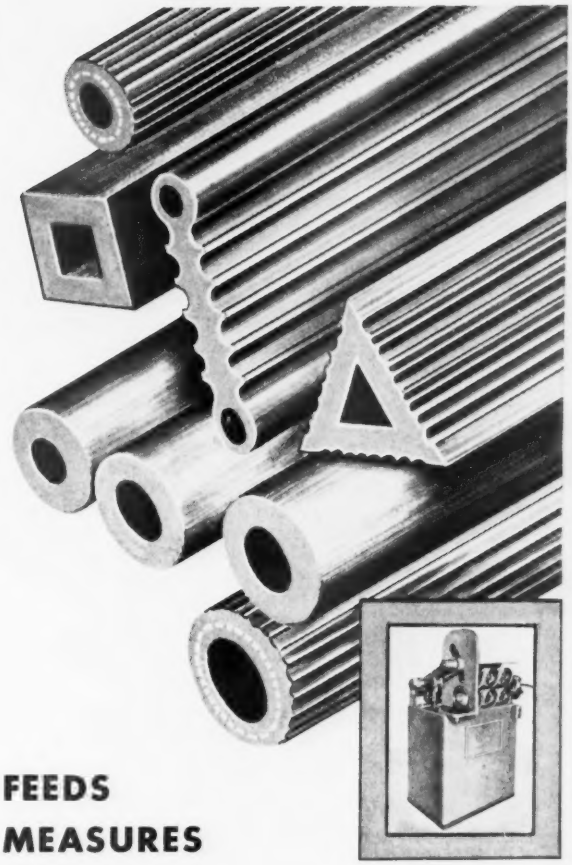
Reinforcement of Neoprene with Plio-Tuf Resins. (Techni-Guide PT-100-4). Chemical Division, Goodyear Tire & Rubber Co., Akron 16, Ohio. 8½ x 11 in. 10 pp.

It has been found that the Plio-Tuf resins have very interesting properties which particularly suit them for the reinforcement of neoprene. This technical publication outlines the work which has been done in this direction and takes into account the properties of the resins and the processing of Plio-Tuf and neoprene blends. Also covered is the compounding of Plio-Tuf and neoprene blends, with special attention paid to low, equal and high resin-rubber blends.

•

Limitamp Control. (GEA-5409). General Electric Co., Schenectady, N. Y. 8½ x 11 in. 16 pp.

Limitamp high-voltage motor control, its operation and application are described in this new booklet. This two-color publication uses photographs, charts and diagrams to explain the limitamp coordinated control system, its economic and safety features, as well as accuracy and component equipment.



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The PIGMENT & CHEMICAL CO. Ltd. ..Toronto

REVIEWS (CONT'D)

Gearing Up for Better Production. (Manufacturing Series No. 212). American Management Association, 330 West 42nd St., New York 36, N. Y. 6 x 9 in. 58 pp. $1.00 (members). $1.25 (non-members).

The papers published in this booklet were originally presented at the October, 1953, Fall Manufacturing Conference of the American Management Association at Philadelphia, Penna. Organizational and interdepartmental aspects of the manufacturing job are considered and such topics as the chief manufacturing executive's job and getting the most from engineering are covered. Also discussed are the organization of the maintenance function and the role of the financial division in company operations.

•

Portable Potentiometer Indicators and Resistance Thermometers. (Bulletin A-303-1). Foxboro Co., Foxboro, Mass. 8½ x 11 in.

Two portable temperature indicators, the potentiometer indicator and the resistance thermometer, are described in this bulletin. Described in detail are operating adjustments, features of design, test circuits, measuring elements and instrument specifications. An entire page is devoted to listing the standard scales available, covering temperatures from —200° F. to +2800° F. Tables also list the type of thermocouple or resistance bulb recommended for each range, as well as the degrees of temperature indicated by each scale division. Also covered is the use of portable pyrometers in checking installed pyrometric instruments and in replacing potentiometers which are temporarily out of service.

•

Protecting the Public Health. E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. 9 x 12 in. 32 pp.

The story of how one American company fulfills its responsibility toward the public health is told in this booklet which highlights a program of industrial medicine going far beyond periodic employee medical examinations and even its protection of people in the manufacture, use, and transportation of chemical products. The booklet focuses on the starting point for much of the program, the Haskell Laboratory for Toxicology and Industrial Medicine, oldest of its kind in the United States. Some of the medical research programs entered into by the company and some of the precautionary methods employed at its plants are discussed.

•

Horse Head Unit Loads. New Jersey Zinc Co., 160 Front Street, New York 38, N. Y. 8½ x 11 in. 8 pp.

This booklet illustrates the modern method of shipping 50-pound bags of pigment as pioneered and developed by the company several years ago. This method is said to result in savings to customers of up to 33⅓. Using a fork truck and tiering the bags in such a manner that they interlock, the unit load can be lifted without need of pallet or other rigid support. The bags, from which air has been removed, occupy less space and can be stacked easier, the booklet states. It is claimed that one operator and a helper can unload an entire carload shipment in less than two hours.

•

Materials Handling Equipment. Palmer-Shile Co., 16000 Fullerton Avenue, Detroit 27, Mich. 8½ x 11 in. 48 pp.

Several new products are described in this catalog, including steel boxes with lap joints, a stand and reel for handling steel coils and a new type of nesting stacking box, all designed to simplify and improve materials handling. Another new item discussed is a skid box with a side door which provides easy access to materials without removing stacked boxes. Profusely illustrated, the catalog offers concise descriptions of the units as well as specification data.

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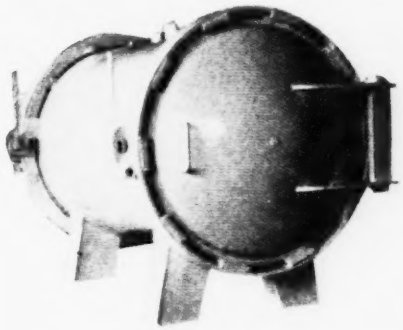

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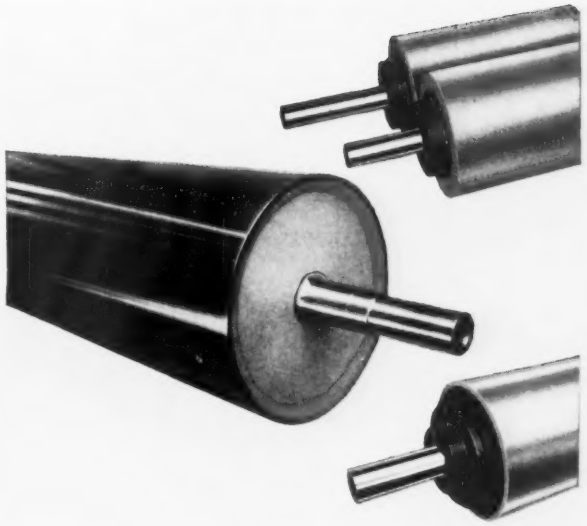

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MARKETS NEWS-PRICES

NEW YORK, APR. 5, 1954

Natural Rubber

Since our last report (March 5), the average price of spot rubber on the New York Commodity Exchange has swung in the range of 250 points, high for the period being 22.00c reached on April 2, and low being 19.50c reached on March 5. The average price of spot rubber for the month of April was 20.16c based on 23 trading days. This compares with 19.98c in the previous month.

As rubber prices moved up from the 19.50c level in effect at the beginning of the period, speculative elements took heart and actively participated on the buying side of rubber futures. This has served to lift the price structure to the highest levels since December of 1953.

The first evidence of any particularly speculative activity developed in the latter part of March. At that time there was a general resumption of commission house buying which forced a complete change in the complexion of the market. This speculative participation has been more or less general. The trade believes that the speculator has been encouraged by the belief that the price of natural rubber was well behind the advances shown by many of the major imported commodities.

The history of natural rubber is marked with many periods of extremes. With the trend of prices upward, and with advances having been scored in numerous commodities for the past few months, rubber looked "cheap" to speculators.

Forthcoming Colombo Meeting

Buffer stock proposals appear certain to be revived at the 11th meeting of the International Rubber Study Group which opens on May 3 at Colombo, Ceylon. There have been reports that Malayan interests are going "all out" to swing Indonesia into support of the buffer stock plan.

Since the last meeting of the Study Group in Copenhagen in May, 1953, producer groups have complained frequently that natural rubber consumption in the U. S. has failed to meet expectations raised in a statement by manufacturers at that conference.

At that time, the U. S. was using less than 37% of it total new rubber requirements in natural rubber. What the U. S. delegation actually said was that it was "the expectation of the U. S. rubber consuming industry that, through increasing use of natural rubber, the percentage of usage of natural rubber in the U. S. will be well above 40%." Critics will have difficulty in reconciling their complaints with January consumption figures, for example, which showed U. S. use of natural rubber had risen to almost 49% of the total.

Notwithstanding the current price rises in natural rubber, the U. S. delegation may still find itself under no little pressure to go along with some buffer stock arrangement. In view of strong opposition from American manufacturing circles, however, it does not seem likely that the U. S. delegation will be swayed to concur in any such arrangement.

Price Data

Closing Rubber Prices on New York Commodity Exchange (No. 1 R.S.S. Contract)

FROM MARCH 5 TO APRIL 4

Mar.	Spot	May	July	Sept.	Dec.	Sales
5	19.50	19.40	19.40	19.40	19.42	44
6	....	....	....	....	....	....
7	....	....	....	....	....	....
8	19.75	19.35	19.35	19.35	19.35	10
9	19.88	19.70	19.75	19.70	19.70	34
10	19.88	19.65	19.60	19.60	19.65	65
11	19.75	19.45	19.45	19.50	19.45	10
12	19.88	19.80	19.65	19.71	19.70	11
13	....	....	....	....	....	....
14	....	....	....	....	....	....
15	20.25	20.10	19.99	19.95	19.96	78
16	20.25	20.15	19.95	19.91	20.01	69
17	20.38	20.30	20.10	20.10	20.15	45
18	20.38	20.10	19.95	19.95	19.95	44
19	20.38	20.25	20.15	20.10	20.10	24
20	....	....	....	....	....	....
21	....	....	....	....	....	....
22	20.50	20.50	20.35	20.30	20.36	120
23	20.38	20.10	20.05	20.05	20.10	37
24	20.38	20.35	20.10	20.10	20.10	16
25	20.50	20.50	20.35	20.30	20.39	48
26	20.50	20.50	20.33	20.30	20.39	136
27	....	....	....	....	....	....
28	....	....	....	....	....	....
29	20.50	20.70	20.50	20.55	20.69	136
30	21.00	20.85	20.76	20.75	20.89	152
31	21.00	21.05	20.85	20.80	20.90	136
Apr.						
1	21.50	21.60	21.40	21.45	21.58	211
2	22.00	22.34	22.20	22.20	22.35	312
3	....	....	....	....	....	....
4	....	....	....	....	....	....

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.22
April	.21 7/8
May	.21 7/8
Thin Latex Crepe:	
Spot	.24 1/4
Thin Brown Crepe, No. 2	.20 1/2
Smoked Blankets	——
Flat Bark Crepe	.15 3/4

London Market

(Standard Smoked Sheets)

May	20.98 - 21.12
July-Sept.	21.42 - 21.56

Singapore Market

(Standard Smoked Sheets)

May	19.36 - 19.40

Synthetic Rubber

(Dry Types—Per Pound)

Butaprene NF	.490 - .500
Butaprene NL	.500 - .510
Butaprene NAA	.540 - .550
Butaprene NXM	.580 - .590
Chemigum 30N4NS	.500 - .510
Chemigum 50N4NS	.500 - .510
Chemigum N3	.580 - .590
G-E Silicone Rubber (compounded)	2.50 -3.60
G-E Silicone Gum (not compounded)	4.00 -4.20
GR-I	—— - .220
GR-S	—— - .230
Hycar OR-15	.580 - .590
Hycar OR-25	.500 - .510
Hycar OS-10	.550 - .560
Neoprene Types AC and CG	—— - .550
Neoprene Type GN	—— - .410
Neoprene Type GN-A	—— - .410
Neoprene Type GRT	—— - .420
Neoprene Type KNR	—— - .750
Neoprene Type Q	—— -1.00
Neoprene Type S	—— - .420
Neoprene Type W	—— - .410
Neoprene Type WRT	—— - .450
Paracril B	.500 - .510
Paracril BJ	.500 - .510
Paracril C	.580 - .590
Silastic (compounded)	1.95 -3.38
Thiokol Type A	—— - .470
Thiokol Type FA	—— - .640
Thiokol PR-1	—— - .950
Thiokol Type ST	—— -1.000

Middling Upland Quotations

	Mar. 5	April 5		
	Close	High	Low	Close
May	34.41	34.35	34.28	34.35
July	34.37	34.50	34.44	34.50
Oct.	33.75	34.17	34.08	34.13

Synthetic Rubber

A recent address in the House of Representatives by Representative Paul W. Shafer (Rep., Mich.) has caused some comment in industry circles. Mr. Shafer spoke out against those persons in the rubber industry "who think that a little government ownership, while bad for everyone else, may not be bad for them".

Mr. Shafer made reference to newspaper articles which have appeared recently quoting industry officials. According to the articles, some industry figures do not appear to be too eager to acquire one or more of the government's synthetic plants. Mr. Shafer attacked this attitude, and labeled it as "the whittling down strategy."

The Michigan Republican defined this strategy as an attempt to scare people into thinking that these plants cannot be operated at a profit. It also leads some to believe that the plants are obsolete, or that bids can be cut down if other prospective bidders are scared off.

Mr. Shafer said: "I want to serve notice right here and now that if anybody in private industry entertains the idea of buying one of these facilities at a giveaway price, they will get that facility only over my violent objection.

"Or if anyone in the rubber industry, having been under government control so long, wants only to pay lip service to the theory of private enterprise and is not willing to invest in the future of this nation and the private enterprise system, then believe me, if he is successful, he will get all the Government he wants, and perhaps more.

"Well, I believe there are enough people in private industry in this nation who have confidence in the future of America to buy these plants at a fair price and the few faint hearts will just have to get along under the private enterprise system."

Synthetic Rubber Abroad

Recent advices from England state that several pilot and synthetic rubber producing facilities are being planned in that country. In recent months, similar news has been heard from France, while a resurgent synthetic rubber industry in West Germany may soon be making an impact on the Continent.

It is held in some quarters that these activities may represent still another hindrance to the natural rubber producing industry. It should be emphasized, however, that most of the projected plants will be producing relatively small quantities of specialty rubbers.

The *Singapore Straits Times* in an editorial referring to Britain's entrance into the synthetic rubber field said: "It would compete with natural rubber as American synthetic did, and all the sooner if manufacturers could secure Government sponsorship." The editorial went on to say that even without Government sponsorship, the synthetic industry would eventually compete with natural.

According to recent statistics available from the U. S. Department of Commerce, world production of synthetic rubber in January, 1954, totaled 65,000 long tons. This figure, of course, excludes Russia. World consumption in the same month was estimated at 57,500 long tons, while stocks at the end of the same month were estimated at 202,500 long tons. In January of 1953, 77,000 long tons were produced, 80,000 long tons were consumed, and at the end of the month there were 140,000 long tons in stocks on hand.

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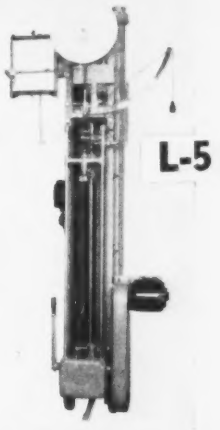
This low-cost tester for rubber fulfills ASTM, Government and UL requirements. It is supplied as a single-purpose machine with one speed, one pair of clamps and a single capacity. In ordering, you have a choice of various capacities up to 200 lbs. or 68 kilograms. It can be furnished with spark recorder, and has quick-return moving clamp. Speed of pull is 20" per minute.

WHERE THE L-5 IS PREFERABLE—

Model L-5 is a heavier, much more versatile tensile tester, which can be operated at a wide range of speeds, is adjustable for various capacities up to 500 lbs. or 136 kilograms tensile, and can use various clamps interchangeably. This is the machine to order for detailed information on a variety of elastomeric evaluation problems. Computes tensile strength per cross section area, and elongation percent.



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Scott Testers — Standard of the World

"Factice"

THE STAMFORD RUBBER SUPPLY CO.

Vulcanized Oil

THE SEAL OF DEPENDABILITY

Our products are engineered to fill every need in natural and synthetic rubber compounding wherever the use of vulcanized oil is indicated.

We point with pride not only to a complete line of solid Brown, White, "Neophax" and "Amberex" grades, but also to our hydrocarbon solutions of "Factice" for use in their appropriate compounds.

Continuing research and development in our laboratory and rigid production control has made us the leader in this field.

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Oldest and Largest Manufacturers of "Factice" Brand Vulcanized Oil Since 1900

(Reg. U.S. Pat. Off.)

THE STAMFORD RUBBER SUPPLY COMPANY

Stamford, Conn.

MARKETS

NEWS-PRICES

NEW YORK, APR. 5, 1954

Reclaimed Rubber

Trade sources report that at one plant, at least, shipments for March were down slightly from the previous month. It is reported that tire manufacturers are still buying good quantities. At this time of year, however, many tires are going into inventory. Current price increases in the price of natural rubber may have some effect on reclaim demand, but this is problematical.

The U. S. Department of Commerce reports that 40,929 long tons of reclaimed rubber were produced in the first two months of the current year, contrasted with the 51,157 long tons produced in the first two months of 1953. Consumption in the first two months of 1954 was set at 38,628 long tons, while 1,884 long tons were exported. In the first two months of 1953, 49,454 long tons were consumed, while 1,816 long tons were exported. As of February 28, 1954, there were 32,855 long tons on hand, while at the end of the first two months of the preceding year, there were 30,631 long tons on hand.

(Prices for All Areas Except Calif.)

	per lb.
Premium Grade Whole Tire	.10½
First Line Whole Tire	.10
Second Line Whole Tire	.09½
Third Line Whole Tire	.09¼
Fourth Line Whole Tire	.08¾
Black Carcass	.14¼
No. 1 Light Colored Carcass	.20¾
No. 1 Select Peel	.11¾
No. 1 Peel	.10½
Butyl Tube Reclaim	.12½
Natural Rubber Black Tube	.15
Natural Rubber Red Tube	.21
Natural Rubber Gray Tube	.21

Tire Fabrics

American Enka reports that total industry sales of 444,000,000 pounds of rayon tire yarn in 1953 were nearly 10% above 1952, establishing a new record for the product. In 1953, the trend toward the increasing use of rayon in tires continued to the point where rayon accounted for all but a minor part of the total tire yarn consumed.

The declining rate of tire yarn production in the last four months of 1953 is an indication that rayon tire yarn is subject to about the same market fluctuations as exist in the demand for automobile, truck and other heavy-duty tires.

(Prices f.o.b. Shipping Point)

Rayon Tire Cord

1100	lb.	.76½
1650	lb.	.73½
2200	lb.	.73

Nylon Tire Cord

210	lb.	2.00
840	lb.	2.00

Rayon Graded Fabric

1100	lb.	.72
1650	lb.	.69½
2200	lb.	.68½

Cotton Chafers

14.4 oz. (per square yard)	lb.	.71
9.25 oz. (per square yard)	lb.	.66½
11.65 oz. (per square yard)	lb.	.63
8.9 oz. (per square yard)	lb.	.68

Scrap Rubber

Some interesting things were said about the past and the future of the scrap rubber market at the recent meeting of the Scrap Rubber and Plastics Institute of the National Association of Waste Material Dealers, Inc. In an address at the meeting, Milton A. Kushkin (Schulman), president of the Institute, pointed out that 3,000,000,000 pounds of scrap rubber were available in this country in the past twelve months. The rubber reclaiming industry consumed some 560,000,000 pounds. What happened to the other 2,000,440,000 pounds, queried Mr. Kushkin?

Uncollected tonnage of scrap tires, said the speaker, accounts for a good deal of the disparity. This more than a million tons of rubber that overhangs the market is the reason that scrap rubber prices are barely enough to cover the freight to the consuming centers.

The dullness in the present scrap rubber picture, stated Mr. Kushkin, is a sign of the progress that has been made and the prosperity we enjoy. More automobiles means more scrap rubber, more scrap than the reclaimers can use. Plastics have also taken away a large part of the business that formerly went to reclaim.

The future of the scrap rubber industry, however, may not be as gloomy as it now seems, he stated. He noted that a lot of time and money is being spent by reclaimers in developing new products and markets. Substantial quantities of reclaimed rubber are now being used with certain plastics in the manufacture of pipe. All these, in turn, contribute to a greater demand for scrap.

The fact that plastics are supplementing rubber in many places, will probably turn out to be a boon for the scrap rubber industry. Reclaimed rubber, which is itself a plastic, he observed, may have many new markets opened to it. Products which cannot be made of rubber alone, or plastic alone, may be able to be manufactured out of combinations of reclaim and plastic.

The plastic industry, Mr. Kushkin stated, is still in its infancy. The more uses that are found for plastics, the more possibilities there are that reclaimed rubber will also have new uses.

The speaker opined that many times in the past the scrap rubber market has been down, only to rise again. While we are now in a down period, technological developments, particularly the reclaim-plastic combinations, may force an upturn in scrap rubber fortunes, he concluded.

Current Conditions

Activities in the scrap rubber market during the past few weeks continue the rather slow pace which has characterized the market since the first of the year. Dealers had awaited April orders with some degree of expectancy, but the expected upturn did not materialize to any marked degree. March business, as well, was also smaller than had been anticipated in some quarters. At the moment, prices in the scrap rubber market are being considered as nominal.

(Prices Delivered Akron)

Mixed tires	ton	13.50
Light colored carcass	lb.	.05½
No. 1 peelings	ton	48.00
No. 2 peelings	ton	30.00
No. 3 peelings	ton	24.00
Buffings	ton	18.00
Truck and Bus S.A.G.	ton	17.00
Passenger S.A.G.	ton	15.00
Natural Rubber Red Tubes	lb.	.10
Natural Rubber Black Tubes	lb.	.05½
Butyl Rubber Tubes	lb.	.02½

Liquid Latex

Natural: According to Latex & Rubber, Inc., January consumption at 6,106 long tons was excellent. February, being a shorter month, complicated by holidays in some areas, is not expected to be as high as the previous month. Forecasts of U. S. consumption continue at the 6,000 ton monthly level, whereas the rest of the world's consumption is estimated at between 4,200 and 4,550 tons per month for 1954.

Prices for ASTM quality centrifuged Hevea latex are somewhat firmer for the April-June period, with the price ranging between 28½ to 30c for March and April deliveries, and 28¼ to 29½c for May, June and July deliveries.

With the recent port strikes complicating the unloading of latex from overseas, the flow was not cut off, but was slowed down. Port congestion delayed tank car movements and deliveries, though no factory shutdowns were reported as a result.

Synthetic: Preliminary figures from the Commerce Department indicate that 4,089 long tons of GR-S latex were produced in January, and 4,000 in February. The Department reports that 592 long tons of neoprene latex were produced in January and 600 in February, while production of acrylonitrile latices in January totaled 471 long tons, and in February, 300 long tons. Prices for GR-S latices range between 21.5 to 26c; neoprene latices, from 37 to 40c, and acrylonitrile latices, from 47 to 55c, all per-pound dry solids in tank cars from works or point of shipment.

Cotton

The price of middling uplands on the New York Cotton Exchange has moved in the exceedingly narrow range of 20 points since our last report (March 5), high for the period being 35.35c reached on March 10, 11 and 12, and low being 35.15c reached on March 5 and again on April 1. The average price of middling uplands for the month of March was 35.23c based on 23 trading days. This compares with an average of 35.00c in February.

The Department of Agriculture reports that in the August-February period of this season, about 5,106,000 bales were consumed, compared with the 5,514,000 bales in the corresponding period last season. A season's total of about 8,750,000 bales would be realized if mill consumption in the remaining five months of the current season was to be maintained at a level equal to that of the first 7 months.

In the eight post-war years, mill consumption in the August-February period comprised slightly over 59% of the total annual consumption. A projection based on this relationship would indicate a 1953-54 total consumption of about 8,650,000 bales. Mill consumption totaled 9,461,000 bales last season.

Government price supports for cotton will drop to 80% of parity next year if the flexible provisions of the 1949 Farm Act are allowed to take effect in 1955 without modification, Agriculture Secretary Benson told Congress recently. Mr. Benson explained that the 80% support level for 1955 was computed on the assumption that Congress would not approve the Administration's proposal for cotton "set-asides" ranging from 3,000,000 to 4,000,000 bales. Such "set-asides" would be authorized in a bill now pending before the Senate Agriculture Committee.

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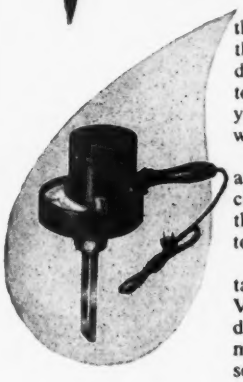
TO BETTER DIPPING, LEVELING, BRUSHABILITY and SPRAYABILITY



With a Brookfield Viscometer on the job, you just flick a switch, read the dial and have your determination directly in centipoises. Flow characteristics upon which the quality of your product depend can be studied with slide-rule speed.

High accuracy *plus* high sensitivity are inherent in the Brookfield principle of operation — direct indication through a calibrated spring of the torque on a rotating spindle.

Rheograms of rubber solutions obtainable with a multispeed Brookfield Viscometer can be correlated to conditions of mastication, plasticity of milled rubber, physical conditions of solid compound and nature of solvent.

Ideal for use both in Labs and at points-of-process, Brookfield Viscometers are portable and plug into any ac outlet. Send for fully illustrated 1954 catalog listing all models and accessories. Write today to Dept. R.

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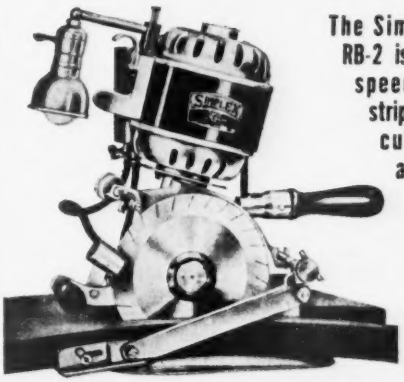
SIMPLEX REG. TRADE MARK

CUT 2500 FEET OF STRIP PER HOUR



The Simplex Model RB-2 is a new high speed, portable strip cutter that cuts efficiently and accurately.

U. S. Patent 2,294,497

The new Model RB-2 has a maximum cutting thickness of two inches, weighs 44.5 pounds, and is available in both A.C. and D.C. types. Manually operated, the machine is capable of cutting up to 20,000 feet of rubber strip in eight hours. A series of slits in the edge of the cutting blade carries water from a reservoir into the cut and not just to the top of the rubber being cut. This method lubricates the entire cut and produces a straight and even edge.

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Manufacturers of a Complete Line of Cloth Cutting Machinery

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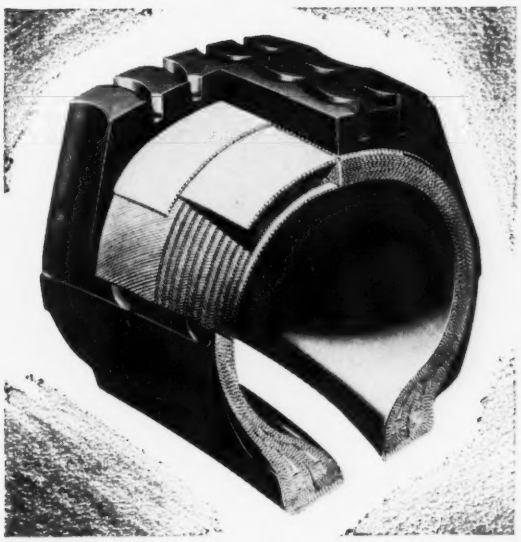
Resorcinol makes the strongest rubber-fiber bond!



Resorcinol-formaldehyde resin is superior to other adhesives in bonding synthetic reinforcing fibers to rubber, synthetic and natural. Industrial belting, hose and tires are among the many rubber products made stronger, more permanent by Resorcinol-based resins.

In the production of heavy duty tires, especially, the use of Resorcinol is practically mandatory.

Rugged tires, such as those for trucks, airplanes, farm and earthmoving equipment, generally require nylon and rayon cord for their construction. Other available adhesives do not form comparable bonds between these smooth synthetic fiber filaments and the rubber.

Resorcinol-formaldehyde resin, however, creates a bond between synthetic cords and rubber that will withstand prolonged flexure in service without separating.

Resorcinol is only one of the many synthetic chemicals produced by Koppers. Others include Styrene Monomer, Polystyrene, Phthalic Anhydride, Divinylbenzene, and Di-tert-butyl-para-cresol.

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KOPPERS COMPANY, INC.

Chemical Division, Dept. RA-44, Pittsburgh 19, Pennsylvania

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CURRENT MARKET PRICES

of rubber chemicals and compounding ingredients

APRIL 1, 1954

Prices are, in general, f.o.b. works. Range of prices indicates grade or quantity variations.

Abbreviations: bbls., barrels; c.l., carlot; cyl., cylinder; dlvd., delivered; dms., drums; eqld., equalized; l.c.l., less than carlot; M.B., masterbatch; min., minimum; ref., refined; sap., saponified; sp., special; syn., synthetic; t.c., tank cars.

*For Export Only

The arrangement of this section closely follows the Chemical Section of the 1953-54 RUBBER RED BOOK. Readers are referred to the RUBBER RED BOOK for the correct classification of any material or brand name. Suppliers of every material are contacted for price information. However, only those materials are listed for which quotations have been furnished within the past six months. The quotations are not guaranteed and prospective purchasers should contact suppliers for information. Suppliers are requested to send current price information to the Market Editor, RUBBER AGE.

ACCELERATORS

A-1 (Thiocarbanilide)	lb.	.50	.57
A-32	lb.	.66	.80
A-100	lb.	.52	.66
Accelerator No. 8	lb.	—	1.10
Accelerator—49	lb.	.53	.54
Accelerator—552	lb.	—	2.25
Accelerator—808	lb.	.66	.68
Accelerator—833	lb.	1.17	1.19
Accelerator B	lb.	—	.89
Altax	lb.	.48	.50
Ancap *	lb.	.38	.40
Ancatax *	lb.	.48	.50
Ancazate * BU (ET & ME)	lb.	—	1.04
Ancazide * ET	lb.	—	1.04
ME	lb.	—	1.14
Arazate	lb.	—	2.25
Beutene	lb.	.66	.68
Bismate, Rodform	lb.	—	3.00
Butasan	lb.	—	1.04
Butazate	lb.	—	1.04
Butyl Accelerator 21	lb.	—	.89
Butyl Eight	lb.	1.10	1.35
Captax	lb.	.38	.40
C-P-B	lb.	—	1.95
Cumate, Rodform	lb.	—	1.45
Dibenzo G-M-F	lb.	—	2.60
Diorthotolylguanidine	lb.	.57	.58
Diphenylguanidine	lb.	.48	.49
El-Sixty	lb.	.50	.57
Ethasan	lb.	—	1.04
Ethazate	lb.	—	1.04
Ethyl Thiurad	lb.	—	1.04
Ethyl Tuex	lb.	—	1.04
Ethylac	lb.	.93	.95
G-M-F	lb.	—	2.60
Guantal	lb.	.57	.64
Harvex	lb.	.62	.68
Hepteen	lb.	.44	.46
Base	lb.	—	1.85
Kure-Blend MT	lb.	—	.70
Ledate, Rodform	lb.	—	1.04
MBT-XXX	lb.	.49	.51
Merac	gal.	.75	1.05
Mercaptobenzothiazole	lb.	.38	.40
Mercaptobenzothiazyl Disulfide	lb.	.48	.50
Mertax	lb.	.49	.56
Methasan	lb.	—	1.04
Methazate	lb.	—	1.04
Monex	lb.	—	1.14
Mono Thiurad	lb.	—	1.14
Morfex	lb.	.65	.67
2-MT	lb.	—	1.00
NA-22 (for neoprene)	lb.	—	1.50
NOBS No. 1	lb.	.69	.71
Special	lb.	.79	.81
O-X-A-F	lb.	.49	.51
Pentex	lb.	—	1.04
Flour	lb.	—	.21
Permalux (for neoprene)	lb.	—	2.17
Phenex	lb.	.52	.57
Pip-Pip	lb.	—	2.25
Polyac	lb.	—	1.65
R-2 Crystals	lb.	—	2.45
Rotax	lb.	.49	.51
RZ-50	lb.	—	1.00
B	lb.	—	1.00
SA-52	lb.	—	1.14
SA-57	lb.	—	1.04
SA-62	lb.	—	1.04
SA-66	lb.	—	2.60
SA-67	lb.	—	1.04
SA-77	lb.	—	1.04
Santocure	lb.	.69	.76
Selenac (Ethyl, Methyl)	lb.	—	2.60
Setsit-5	lb.	.75	1.05
SPDX-GH	lb.	.64	.69
GL	lb.	—	.95
Tellurac	lb.	—	1.45
Tepidone	lb.	.45	.48
Tetrone A	lb.	—	1.91
Thiofide	lb.	.48	.55
S	lb.	.51	.58
Thionex	lb.	—	1.14
Thiotax	lb.	.38	.45
Thiurad	lb.	—	1.14
Thiuram E	lb.	—	1.04
M	lb.	—	1.14
Trimene	lb.	.56	.58
Base	lb.	1.03	1.06
Tuads, Ethyl	lb.	—	1.04
Tuads, Methyl	lb.	—	1.14
Tuex	lb.	—	1.14
Ultex	lb.	1.00	1.10
Unads	lb.	—	1.14
Vulcacure NB	lb.	—	.45
ZB	lb.	—	.85
ZE	lb.	—	.85
ZM	lb.	—	.85
Z-B-X	lb.	—	2.45
Zenite	lb.	.48	.50
A	lb.	.57	.59
Zenite Special	lb.	.49	.51
Zetax (uncoated)	lb.	.49	.51
Zimate, Butyl	lb.	—	1.04
Zimate, Ethyl	lb.	—	1.04
Zimate, Methyl	lb.	—	1.04

ACTIVATORS

Blue Lead Sublimed (dlvd.)	lb.	.14¾	.15¾
Fish Oil, Hydrogenated, Fatty Acid			
Hydrofol Acids (dlvd.)	lb.	.13¾	.17
Hyfac 430 (dlvd.)	lb.	.15½	.17¾
Neo-Fat H.F.O. (dlvd.)	lb.	.14½	.15¾
Stearex Beads (dlvd.)	lb.	.09¾	.10¾
Lime, Hydrated			
Arrowhead	ton	—	20.50
Marblehead	ton	—	16.00
Sierra	ton	—	22.00
Litharge			
Eagle-Picher	lb.	—	.15¾
SB (dlvd.)	lb.	—	.15
Magnesium Oxide, Heavy			
General Magnesite 500	lb.	.05	.06½
600	lb.	.06	.08
Michigan No. 15	lb.	.06	.06½
Permanente	lb.	.05	.06½
Magnesium Oxide, Light			
Baker's (Neoprene Grade)	lb.	—	.31
General Magnesite (Neoprene Grade)	lb.	—	.30
General Magnesite No. 101	lb.	.21½	.22½
Genmag ML	lb.	—	.25
195	lb.	—	.20½
K & M (Neoprene Grade)	lb.	.30	.31
Maglite D	lb.	—	.25
M	lb.	—	.31
Marine's (Neoprene Grade) (l.c.l.)	lb.	—	.30
Michigan No. 30	lb.	—	.25
No. 40 Extra Light	lb.	—	.31
Witco Extra Light	lb.	.32	.35

ACTIVATORS (Cont'd)

Oleic Acid			
Emersol 210 (dlvd.)	lb.	.16	.17¾
L.C.P. Red Oil	lb.	.16	.17¾
Neo-Fat 90-14	lb.	—	.14
92-04	lb.	.16¾	.18½
Palm Oil Fatty Acid (c.l.)	lb.	.10½	.14
Potassium Oleate (dms.)	lb.	.45	.55
Red Lead			
Eagle-Picher	lb.	—	.16¾
No. 2 RM (dlvd.)	lb.	—	.17
Sodium Laurate, 75%	lb.	.64	.74
Sodium Oleate, 75%	lb.	.45	.55
Paste (dms.)	lb.	—	.20
Sodium Stearate, 75%	lb.	.45	.55
USP Grade (drums)	lb.	—	.37
Stearic Acid, Single Pressed			
Emersol 110 (dlvd.)	lb.	.13¾	.15½
Groco 53	lb.	.13¾	.15½
Neo-Fat 18-53	lb.	.13	.13¾
Wochem 730	lb.	.10¾	.12½
Stearex B (dlvd.)	lb.	.15½	.16¼
Stearic Acid, Double Pressed			
Emersol 120 (dlvd.)	lb.	.14¾	.16
Groco 54	lb.	.14¾	.16
Neo-Fat 18-54	lb.	.13½	.14½
Wochem 731	lb.	.13½	.15¾
Stearic Acid, Other			
Neo-Fat 1-58	lb.	.1190	.1315
1-60	lb.	.1400	.1525
1-65	lb.	.1450	.1575
Wochem 732	lb.	.15¾	.17½
White Lead Basic Carbonate	lb.	.16	.17
White Lead Basic Sulfate	lb.	.14¾	.15¾
Zinc Laurate			
Laurex	lb.	.32	.33
Zinc Stearate	lb.	.39	.42
Aquazinc	lb.	.26	.35

Unclassified Activators

Actifat (dms.)	lb.	—	.18
Actogen	lb.	—	.62
Aktone	lb.	.22	.23
Barak	lb.	—	.62
Curade	lb.	.57	.59
D-B-A	lb.	—	1.95
Dibutylamine (dlvd.)	lb.	.55	.56
MODX	tons	.32½	.34½
Ridacto (drums)	lb.	.25	.26
Snodette (dlvd.)	lb.	.17¾	.19½
Vulklor	lb.	.75	.85

ANTI-COAGULANTS

Anhydrous Ammonia (l.c.l.)	lb.	.17	.21
Aqua Ammonia (dms.)	lb.	.031	.035
M.B.M. (l.c.l.)	lb.	—	.35

ANTI-FOAMING AGENTS

Aero Anti Foam H	lb.	—	.20
Regular	lb.	—	.12
D.C. Antifoam A	lb.	5.45	6.65
Antifoam AF Emulsion	lb.	2.05	4.00
Antifoam AF Emulsion	lb.	2.05	2.85
Defoama W-1701	lb.	—	.12½
Defoamer A-25	lb.	—	3.00
Defoamer 630	lb.	—	.12½
Deltyl Prime	lb.	.70	.80
Emcol 1M	lb.	—	.60
Kessco X-3 (dms.)	lb.	—	.35½
Nopco 1407	lb.	.20	.20½
1497-V	lb.	.13¾	.14¼
1907-B	lb.	.18¾	.19¼
JMK	lb.	.48½	.49
RS-968	lb.	.38	.38½
SS-24 Silicone Anti-Foam	lb.	5.80	6.90
66	lb.	5.70	6.20
Terpinol Prime No. 1	lb.	.35	.50

ANTIOXIDANTS

Agebest 1293-22A	lb.	1.90	2.00
Agerite Alba	lb.	2.35	2.45
Gel	lb.	.64	.66
Hipar	lb.	.98	1.00
H. P.	lb.	.72	.74
Powder	lb.	.52	.54
Resin	lb.	.75	.77
Resin D	lb.	.52	.54
Stalite	lb.	.52	.54
White	lb.	1.45	1.55
Akroflex C	lb.	.77	.79
CD	lb.	.72	.74
Aminox	lb.	.52	.54
Antioxidant 2246	lb.	1.65	1.68

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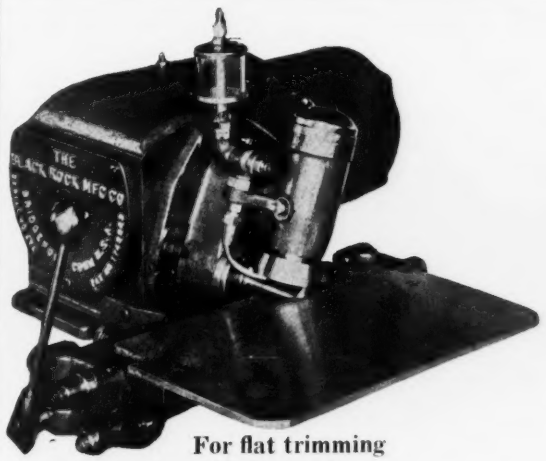
IMPROVE YOUR TRIMMING PRODUCTION

. . . With a BLACK ROCK 4TA



For flat trimming

- Cutters are self-sharpening
- Mechanism completely enclosed.
- Unit driven by an integral 1/6 H.P. Motor.
- Ball bearing mounted.

For circular trimming

The Black Rock 4TA Rubber Trimmer is the most compact, sturdy . . . yet flexible machine made. Designed for accurate and rapid work, it trims flat as well as circular pieces and possesses many exclusive features.

WRITE TODAY FOR BULLETIN #19-A.

FINE BR TOOLS

BLACK ROCK MFG. CO.
175 Osborne Street Bridgeport 5, Conn.
N. Y. Office, 261 Broadway

ANTIOXIDANTS (Cont'd)

Antox	lb.	.52	.54
Aranox	lb.	—	3.25
Benzoquinone	lb.	1.50	1.75
Betanox Special	lb.	.80	.82
B-L-E	lb.	.52	.54
B-X-A	lb.	.52	.54
Deenax	lb.	.95	1.05
Di-tert-Butyl-para-Cresol	lb.	.91	.95
Eugenol C-95%	lb.	2.30	2.50
Flectol H	lb.	.52	.59
Flexamine	lb.	.72	.74
Neozone A	lb.	.56	.58
C	lb.	—	.80
D	lb.	.52	.54
Octamine	lb.	.52	.54
Oxidex	lb.	—	3.60
PDA-10	lb.	.39	.41
Permalux	lb.	—	2.17
Polygard	lb.	.52	.54
Santoflex AW	lb.	.78	.85
B	lb.	.52	.59
BX	lb.	.63	.70
35	lb.	.72	.79
Santovar-A	lb.	1.50	1.57
Santowhite Crystals	lb.	1.60	1.67
Santowhite L	lb.	.52	.59
MK	lb.	1.29	1.36
Santowhite Powder	lb.	1.60	1.67
Sequestrene AA	lb.	—	.97½
NA2	lb.	—	.79½
NA3	lb.	—	.77½
Stabilite	lb.	.55	.57
Alba	lb.	.72	.77
L	lb.	.60	.62
White	lb.	.53	.55
White Powder	lb.	.41	.43
Stabilizer No. 1	lb.	1.55	1.80
Stabilizer No. 9-A	lb.	.80	1.05
Styphen I	lb.	.51	.55
Sunolite	lb.	.21	.23
Tannic Acid, Tech.	lb.	.46	.48
Thermoflex A	lb.	.98	1.00
V-G-B	lb.	.70	.72
Wing-Stay S	lb.	.51	.52

ANTI-SCORCHING AGENTS

Armeen HT	lb.	.31	.33
Benzoic Acid—Tech.	lb.	—	.43
Good-rite Vultrol	lb.	.62	.64
Harcopol 1183	lb.	.70	.74
Sodium Acetate 60-62% Crystals	lb.	.08	.08½

ANTISEPTICS AND GERMICIDES

Arquad S	lb.	.24	.26
Formaldehyde (dms.)	lb.	.066	.071
G-4 (bbls.)	lb.	1.04	1.19
G-11	lb.	2.20	2.30
Nuodex 100 S.S. (dlvd.)	lb.	—	1.10
Nuodex 100 W.D. (dlvd.)	lb.	—	1.25
Nuodex Zinc 8% (dms.) (dlvd.)	lb.	.24	.28
Ortho Cresol (26°-27°)	lb.	—	.201
Preventol GD	lb.	—	1.04
I	lb.	—	.80
Retarder D	lb.	.42	.50
Soligen Drier—Copper 8% (dms.)	lb.	.20¾	.21¼
Zinc 8% (dms.)	lb.	.22¼	.23½
Vancide	lb.	—	.80

ANTI-WEBBING AGENTS (for Latex)

DC 7 Compound	lb.	5.13	6.50
Webnix 34	lb.	1.50	2.25

AROMATICS (DEODORANTS)

Airkem 115	gal.	—	6.50
122	gal.	—	6.50
186	gal.	—	6.50
Alamask AA	lb.	—	3.00
AF	lb.	—	2.50
AO	lb.	—	1.50
AR	lb.	—	.50
BG	lb.	—	1.15
BGM	lb.	—	.60
CY	lb.	—	2.40
DI	lb.	—	3.35
DL	lb.	—	1.95
H	lb.	—	5.50
LD	lb.	—	.75
ND	lb.	—	2.75
O	lb.	—	6.50
OS	lb.	—	5.25
Bouquet 149	lb.	—	3.00
Coumarin	lb.	2.95	3.00
Curodex 19	lb.	4.75	4.90
188	lb.	5.75	5.90
198	lb.	6.75	6.90
Deodorant 65	lb.	—	1.85
Deodorant L-37	lb.	2.00	2.40
L-44	lb.	2.50	2.90
N.L.T.X.	lb.	1.85	2.15
Deodorant Oil GD 3427	lb.	1.70	2.00
GD 6422	lb.	2.00	2.50
GD 6423	lb.	1.60	1.90
GD 6575	lb.	2.40	2.90
GD 31063	lb.	2.25	2.75

AROMATICS (Cont'd)

Latex Perfume 5	lb.	—	3.25
6	lb.	—	7.50
9	lb.	—	.65
Naugarones (dms.)	lb.	.60	3.00
Neutroleum Delta	lb.	—	2.60
Gamma	lb.	—	3.60
Parador A	lb.	2.00	2.50
C	lb.	2.75	3.25
E	lb.	.25	.55
GD 5280	lb.	2.00	2.50
GD 5348	lb.	1.90	3.25
Perfume Oil Bouquet Vanilla M	lb.	2.40	2.75
Rodo No. 0	lb.	4.00	4.50
No. 10	lb.	5.00	5.50
Rubbarome (dms.)	lb.	.60	3.80
Rubber Perfume 12	lb.	—	2.85
Russian Leather 7	lb.	—	4.35
Vanillin	lb.	3.00	3.25

BLOWING AGENTS

Ammonium Bicarbonate, c.l.	cwt.	—	8.00
Blowing Agent CP-975	lb.	.32	.35
Celogen	lb.	—	1.95
AZ	lb.	1.94	1.95
Sodium Bicarbonate, U.S.P. (c.l., bags)	cwt.	—	2.30
Sponge Paste	lb.	—	.20
Unicel	lb.	—	.90
ND	lb.	—	.76
S	lb	—	.20
Urea	lb.	.04¼	.04¾

BONDING AGENTS

Braze	gal.	6.00	9.00
Cover Cement	gal.	2.50	4.00
Durez 12987	lb.	—	.54
Kalabond	gal.	6.50	7.75
MDI (dms.)	lb.	3.45	3.75
50 (dms.)	lb.	1.85	2.15
Penacolite B1A	lb.	—	.95
R-2710	lb.	—	.95
Pliobond 20	gal.	2.91	4.23
30	gal.	3.65	4.97
R-x Compounds	gal.	1.30	2.85
TDI (dms.)	lb.	2.00	2.30
Thixons	gal.	3.30	9.00
Tv-Ply Q (BN & S)	gal.	6.75	8.00
Tygobond 30	gal.	5.50	7.45

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	9.00	11.00
Glacial 99½% (dms.)	lb.	.12	.13
Calcium Nitrate, Tech. Crystals	lb.	.07	.11½
Hydroxyacetic Acid—70% (dms.)	lb.	—	.084
Zinc Nitrate, Tech.	lb.	—	.22½

COLORING AGENTS

Black

Aquablak B (also M, R)	lb.	.08½	.11¼
Aquablak S	lb.	.11¼	.12
Black Shield 4-35 (dms.)	lb.	—	.09
Carbon Black—See *Reinforcing Agents*			
Lampblack No. 10	lb.	.06	.09
Mapico Black Iron Oxide (50 lb. bags)	lb.	.12¾	.13
Pure Black Iron Oxide	cwt.	12.75	13.00

Blue

Cooke M.B. Blue	lb.	2.45	2.85
Mijori Blue	lb.	—	.48
Monastral Rubber Blue CPL	lb.	—	1.77
PCD, Dispersed	lb.	—	2.20
Peacoline Blue	lb.	—	3.85
Ramapo Blue	lb.	—	3.00
Rubber Blue GD	lb.	—	4.55
Rubber Blue X-1999	lb.	—	1.70
Syntheline Blue	lb.	—	3.85
Stan-Tone MBS	lb.	1.55	4.55
GPE	lb.	—	2.50
PC	lb.	—	2.40
PDS	lb.	—	2.00
PVC	lb.	—	3.25
Ultramarine	lb.	.14	.30
Vansul Blue M.B.	lb.	.90	2.60

Brown

Brown Iron Oxide	lb.	.13¾	.14
Mapico Brown (50 lb. bags)	lb.	.13¾	.14
Stan-Tone GPE	lb.	—	3.00
Vansul Brown M.B. (Organic)	lb.	—	2.10

COLORING AGENTS (Cont'd)

Green

Cooke M.B. Green	lb.	1.45	3.20
Filo Green	lb.	—	.32
Green Chromium Oxide, Pure	lb.	—	.39¾
Green Chromium Oxide, Pure Hydrated	lb.	—	1.10
Monastral Rubber Green GSD (Dispersed)	lb.	—	2.80
GSL	lb.	—	1.97
Permansa Green CP-594	lb.	—	1.35
Pigment Green B	lb.	—	1.35
GL-652D	lb.	.80	.85
Ramapo Green	lb.	—	3.50
Rubber Green FD (disp.)	lb.	—	2.05
Rubber Green X-1292	lb.	—	1.30
Stan-Tone MBS	lb.	1.75	3.60
GPE	lb.	—	3.00
PC	lb.	—	3.00
PDS	lb.	1.90	2.20
PVC	lb.	—	3.60
Vansul Green M.B.	lb.	1.00	3.05

Maroon

Stan-Tone MBS	lb.	—	3.50
Vansul Maroon M.B.	lb.	—	3.25

Orange

Molybdate Orange	lb.	—	.44
Rubber Orange (disp.)	lb.	—	2.75
Rubber Orange X-2005	lb.	—	3.00
Stan-Tone GPE	lb.	—	1.20
PC	lb.	—	1.05
PDS	lb.	—	1.20
PVC	lb.	—	2.25
Vansul Orange M.B.	lb.	2.00	2.50

Red

Antimony Trisulfide	lb.	.72	.78
R. M. P. Sultur Free	lb.	—	.78
R. M. P. No. 3	lb.	—	.72
Cadmium Red	lb.	.95	1.25
Cadmolith Red (bbls.)	lb.	1.75	2.00
Cooke M.B. Red	lb.	.95	3.15
Graphic Red (dlvd.)	lb.	—	.79
Indian Red, American, Pure	lb.	.12¾	.13
Doxco (English)	lb.	.11½	.11¾
Kroma Reds	lb.	.16¼	.21¼
Mapico Reds (50 lb. bags)	lb.	.12¾	.13
Oximony Iron Oxide	lb.	—	.09
Recco Red Oxide	lb.	.12	.13
Red Iron Oxide, Light	lb.	.13	.13½
Rubber Red PBD (disp.)	lb.	—	1.75
2BD, Dispersed	lb.	—	1.80
2BL	lb.	—	1.47
PBL	lb.	—	1.65
Rubanox Red CP-762 (dlvd.)	lb.	—	1.40
Rubber Red CP-339 (dlvd.)	lb.	—	1.10
Rubber Red X-1148	lb.	—	.79
Solfast Red	lb.	1.50	1.95
Stan-Tone MBS	lb.	1.20	4.00
GPE	lb.	1.65	2.00
PC	lb.	1.45	2.40
PDS	lb.	1.40	1.55
PVC	lb.	—	2.00
Sun Burnt Red	lb.	.11½	.11¾
Vansul Red M.B.	lb.	1.20	3.20
Watchung Red	lb.	1.63	1.95

White—Lithopone

Albalith	lb.	.0750	.0850
Eagle-Picher	lb.	.0750	.0825
Permolith	lb.	.0750	.0825
Sunolith	lb.	.0750	.0825

White—Titanium Pigments

Ti-Cal	lb.	.08¾	.09¼
R-25, R-22, R-27, R-30	lb.	.08¾	.08¾
R-60	lb.	.08¾	.09¼
Ti-Pure	lb.	.22½	.25½
Anatase grades	lb.	.22½	.23½
Rutile grades	lb.	.24½	.25½
Titanox A—all grades (dlvd.)	lb.	.22½	.23½
C-50 (dlvd.)	lb.	.12¾	.13¾
RA (dlvd.)	lb.	.24½	.25½
RA-10 (dlvd.)	lb	.24½	.25½
RA-NC (dlvd.)	lb.	.24½	.25½
RC (dlvd.)	lb.	.08¾	.09¼
RC-HT (dlvd.)	lb.	.08¾	.08¾
Unitane O-220	lb.	.19½	.20½
OR-250	lb.	.21½	.22½
Zopaque	lb.	.22½	.23½
R	lb.	.24½	.25½

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TECHNICAL LABORATORY INFORMATION AND SAMPLES UPON YOUR REQUEST

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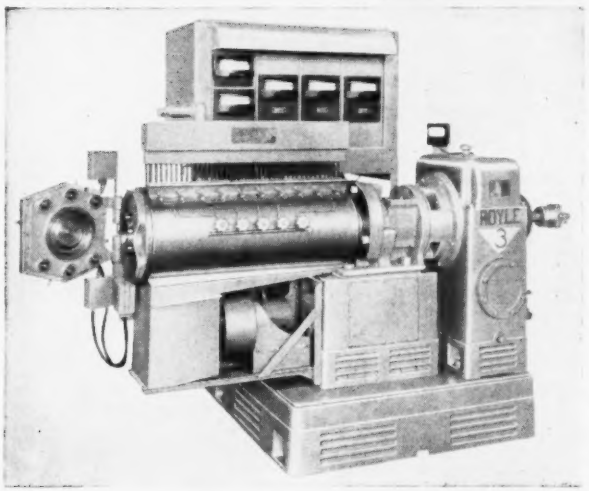
FASTEST HEATING FASTEST COOLING



Here are some of the time-tested, money-saving reasons more and more plants are standardizing with Royle Spirod* Extruders for processes requiring maximum flexibility in controlled temperatures — constantly maintained and accurately zoned:

- **Extra heavy walled cast steel cylinders that will not warp. No joints to leak when pressures are high or crevices to collect burned compound that would cause contamination.**
- **Heavy duty large diameter heating elements, that can be used with 440 volts without step-down transformers, provide radiant heat to cylinders and heads.**
- **Any heating element may be removed and replaced without disturbing other elements or wiring.**
- **A cooling system with ten times the capacity of conventional designs can be modulated through its entire temperature range without drastic changes. Ample cooling for all compounds at maximum speeds.**

No. 3 Royle Spirod Extruder. Completely insulated and equipped for evaporative cooling.

*Patent Applied For

JOHN ROYLE & SONS

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J. C. Clinefelter
SWandale 4-5020

Los Angeles, Cal.
H. M. Royal, Inc.
LOgan 3261

PATERSON 3, NEW JERSEY

COLORING AGENTS (Cont'd)

White—Zinc Oxide (American Process)

AZO ZZZ 11 (and 22, 33, 44, 55)	lb.	.1350	.1450
Eagle Picher AAA	lb.	.1350	.1450
Horse Head Special	lb.	.1350	.1450
XX	lb.	.1350	.1450
Protox 166	lb.	.1350	.1450
167	lb.	.1350	.1450
St. Joe Black Label	lb.	.1350	.1450
Green Label	lb.	.1350	.1450
Red Label	lb.	.1350	.1450

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	—	.13

White—Zinc Oxide (French Process)

Florence Green Seal	lb.	.1525	.1625
Red Seal	lb.	.1475	.1575
White Seal	lb.	.1575	.1675
Kadox 25	lb.	.1575	.1675
Kadox 15, 17 and 72	lb.	.1350	.1450
Protox 168	lb.	.1350	.1450
169	lb.	.1350	.1450
U.S.P. (cartons)	lb.	.1675	.1775

White—Zinc Sulfide

Cryptone ZS	lb.	.2530	.2630

Yellow

Benzidine Yellow	lb.	2.50	3.50
Cadmolith Yellow (bbls.)	lb.	—	1.15
Chrome Yellow	lb.	—	.31
Cooke M.B. Yellow 405	lb.	—	1.70
Iron Oxide, Pure	lb.	.10½	.10¾
Mapico Yellow (50 lb. bags)	lb.	.10½	.10¾
Rubber Yellow GD (disp.)	lb.	—	2.15
GL	lb.	—	1.80
Rubber Yellow X-1940	lb.	—	2.15
Stan-Tone MBS	lb.	1.30	4.50
GPE	lb.	—	4.50
PC	lb.	.85	4.50
PDS	lb.	1.25	1.75
PVC	lb.	—	1.60
Toluidine Yellow YL-660 D	lb.	1.15	1.20
Oximony Iron Oxide	**lb.**	—	**.06¾**
Vansul Yellow M.B.	lb.	.95	1.95
Zinc Yellow	lb.	.25	.30

DISPERSING AGENTS

Anchoid*	**lb.**	**.24**	**.25**
Armeen 18	lb.	.38	.40
Blancol	lb.	—	.15¾
Darvan No. 1 (and No. 2)	lb.	.22	.30
Daxad 11 (21, 23)	lb.	.08	.30
Diethanolamine (dms., dlvd.)	lb.	.27½	.30¼
Dispersaid	**lb.**	**1.25**	**1.35**
Emcol K-8300 (dms.)	lb.	.19	.20
Emulphor ON-870	lb.	—	.61
Furala	**lb.**	**.06½**	**.07½**
Halloid	**lb.**	**.04½**	**.05½**
Igepal CO-630	lb.	—	.36
Igepon T-73	lb.	—	.29½
Leonil SA	lb.	—	.55
Lomar PW	lb.	—	.16
Marasperse C	lb.	.06½	.06¾
CB	lb	.12¾	.13¾
N	lb.	.09½	.10½
Monoethanolamine (dms., dlvd.)	lb.	.28	.30¾
Nekal BA-75	lb.	—	.40
BX-76	lb.	—	.64
Nopco 1187-X	lb.	.15⅞	.16⅜
Rubbex	**lb.**	**.267**	**.285**
Stablex B	lb.	.50	.95
Stan-Chem BQC	**lb.**	**.12¾**	**.17¾**
1067	**lb.**	—	**.13½**
1471	**lb.**	**.1687**	**.2187**
2251	**lb.**	**.12¾**	**.17¾**
Trenamine D-25	lb.	.32½	.36
Triethanolamine (drums) (dlvd.)	lb.	.24¼	.27¾
Yelkin TT	lb.	.13	.17
Zinsper	**lb.**	—	**.15**

EXTENDERS

Advagum 1098	**lb.**	—	**.64**
Arcco 1071-13B	**lb.**	**.14½**	**.15½**
1073-18B	lb.	.13½	.14½
1294-36B	lb.	.11½	.12½
Bunaweld Polymer No. 780	lb.	—	.22
No. 5514	**lb.**	—	**.35**
Car-Bel-Ex-A and B	lb.	—	.14
Extender 600	lb.	—	.1765
Millex	lb.	—	.07
W	lb.	—	.07
Nopco 2271	lb.	.15½	.16½
OPD-101	lb.	—	.26
Polyco 418	lb.	.17	.18
PR-162 Latex Extender	gal.	—	1.55
Synprolac	lb.	.16	.23
Synprowax	lb.	—	.23
Vistanex	lb.	—	.45

FILLERS (Inert and Reinforcing)

Abrasives			
Carbonite	lb.	.20	1.33
Lionite	lb.	.14½	1.25
Pumice	lb.	.03	.05
Aluminum Hydrate	**lb.**	**.07**	**.10**
Aluminum Silicate			
Marter White	**ton**	**18.50**	**30.00**
Barium Carbonate (l.c.l.)	ton	95.50	100.00
Barytes			
No. 1 Floated, White	ton	41.35	60.10
No. 2 Floated, Unbleached	ton	39.35	58.10
No. 22 Barytes (c.l.)	ton	—	25.00
No. 3805 Barytes	ton	21.25	26.75
Foam A	ton	—	41.35
XIOR	ton	75.00	80.00
Bentonite (c.l.)	ton	—	13.50
Argosite Clay (c.l.)	ton	—	12.50
Bennett Clay (c.l.)	ton	—	32.50
SPV Volclay (c.l.)	ton	—	12.50
White Hi-Gel	ton	—	65.90
Blanc Fixe	**ton**	**72.50**	**120.00**
Calcium Carbonate			
Atomite (c.l.)	**ton**	—	**30.00**
B.I. White No. 1 (c.l.)	ton	—	8.00
B.I. White No. 2 (c.l.)	ton	—	7.50
B.I. White No. 390	ton	—	6.25
Blue Star XX	ton	—	15.50
Calcene NC	ton	72.50	92.50
TM	ton	75.00	95.00
Calwhite	**ton**	—	**17.00**
Camel-Carb	ton	—	10.00
Camel-Tex	ton	—	18.00
Camel-Wite	ton	—	30.00
Duramite	ton	—	15.00
Gamaco	**ton**	—	**30.00**
Kalite	ton	50.00	65.00
Keystone White	ton	—	16.00
Laminar	**ton**	—	**30.00**
Lesamite (c.l.)	**ton**	—	**27.50**
Lorite	ton	30.00	35.00
Millical	ton	35.00	50.00
Multifex	ton	140.00	155.00
MM	ton	110.00	125.00
Non-Fer-Al	ton	30.00	45.00
Purecal M	ton	56.75	80.75
SC	ton	110.00	125.00
T	ton	110.00	125.00
U	ton	120.00	135.00
Rambo No. 1	ton	—	8.50
Sierracal	**ton**	**15.00**	**18.50**
Snowflake	ton	17.00	18.00
Super Multifex	ton	160.00	175.00
Surfex	ton	35.00	50.00
Suspenso	ton	33.00	48.00
Witcarb Reg.	ton	56.75	80.75
P	ton	110.00	125.00
R	ton	120.00	135.00
RC	ton	110.00	125.00
York White	ton	—	9.50
Calcium Silicate			
Silene EF	ton	120.00	140.00
Calcium Sulfate, Anhydrous			
Snow White Filler	ton	—	20.50
Calcium Sulfate, Hydrous			
Terra Alba No. 1	**ton**	**12.00**	**14.40**
Chalk Whiting (l.c.l.)	**lb.**	**.0150**	**.0175**
Recco Paris Whiting	ton	—	33.00
Clay			
Aiken Clay	ton	—	14.00
Alsilite (c.l.)	ton	20.00	45.00
Alsite (c.l.)	ton	—	14.00
Aluminum Flake	ton	23.50	30.00
Buca (c.l.)	ton	—	45.00
Burgess No. 20	**ton**	—	**35.00**
No. 30	**ton**	—	**37.00**
Burgess Iceberg	ton	—	50.00
Catalpo (c.l.)	**ton**	—	**35.00**
Champion	ton	—	14.00
C.S.D. (c.l.)	**ton**	—	**13.50**
Crown	ton	—	14.00
Dixie (c.l.)	ton	—	14.00
Franklin Clay (c.l.)	ton	—	13.50
Harwick Clays	ton	18.50	57.00
Hi-White R	**ton**	—	**13.50**
Kaolloid Clay (c.l.)	ton	—	10.50
LGB	ton	—	17.00
LGP	ton	—	19.00
McNamee (c.l.)	ton	—	13.50
Paragon	**ton**	—	**13.50**
Pigment 5	ton	23.50	26.50
Pigment 33	**ton**	—	**37.00**
Recco (c.l.)	ton	—	14.00
Sewanee Clay	ton	—	12.50
Snobrite	ton	—	12.50
Suprex	ton	—	14.00
Whitetex (c.l.)	**ton**	—	**50.00**
Windsor Clay (c.l.)	ton	—	14.00
Diatomaceous Earth	**ton**	**30.00**	**50.00**
Kaylorite (c.l.)	**ton**	—	**30.00**
Lorite	ton	—	30.00
Flock			
Cotton, white and colored	lb.	.11	.28
Filtloc F 40-9000	lb.	—	.13
Filtloc F 6000	lb.	—	.36
Polycel	ton	110.00	210.00
Rayon, bleached or dyed	lb.	.82	1.25
Rayon, grey	**lb.**	—	**.18**
Rayon, pink	lb.	—	.18
Solka-Floc (l.c.l.)	lb.	.07	.16
Glue, Bone (dlvd.)	lb.	.18	.20½
Leather, Shredded	lb.	.05	.17
Lignin	lb.	.03	.06
Indulin	lb.	.06	.08

FILLERS (Cont'd)

Limestone, Pulverized	ton	3.00	4.75
Asbestol Superfine	ton	—	30.00
Georgia Marble No. 10	ton	—	10.00
Industrial Filler No. 100	**ton**	—	**5.75**
Micro Velva A	ton	49.00	51.00
Micro Velva L	ton	57.00	59.00
Magnesium Carbonate	lb.	.0950	.1050
K & M Clearcarb	lb.	.1225	.1275
Magnesium Oxide	lb.	.05	.06
Magnesium Silicate (see Talc)			
Mica	**lb.**	**.01¾**	**.07¾**
Concord	lb.	.07½	.08¼
Micro-Mica	lb.	.07½	.08¼
Mineralite (c.l.)	ton	30.00	85.00
Silversheen	lb.	.07½	.08¼
Triple A Mica (c.l.)	**ton**	—	**25.00**
Vermiculite	lb.	—	.11
Wet Ground Biotite Mica	lb.	.06	.06¾
Wet Ground Mica No. 160	lb.	.07½	.08¼
Pyrophyllite			
No. 261	**ton**	—	**11.50**
Pyrax A (c.l.)	ton	—	13.50
WA (c.l.)	ton	—	16.00
Sawdust, Graded	**ton**	**14.00**	**35.00**
Silica	**ton**	**16.00**	**27.00**
Blue Star	ton	—	20.60
Slate, Powdered (l.c.l.)	**ton**	**15.00**	**20.00**
Lo-Micron Slate Flour	lb.	—	.04½
No. 133 Slate Flour	**ton**	—	**4.55**
Sodium Silico Aluminate Zeolex 23	ton	120.00	140.00
Talc (Magnesium Silicate)			
Asbestol Regular	ton	—	25.00
Blue Star	ton	—	23.00
French	ton	—	59.00
L. S. Silver	ton	29.25	34.25
No. 367	ton	—	13.00
No. 1600	ton	—	70.60
No. 1768	ton	—	13.00
Nytal 200	ton	—	25.00
300	ton	—	36.00
Sierra White	ton	25.75	30.75
Soapstone	ton	—	13.00
Walnut Shell Flour	ton	45.00	115.00
Stan-Shell	ton	63.00	126.00
Whiting, Commercial	**ton**	—	**7.00**
Camel-Carb	ton	—	10.00
C-C-O White	ton	—	19.00
Georgia Marble No. 15	ton	—	15.00
No. 16	ton	—	16.00
Keystone (c.l.)	**ton**	—	**16.00**
Snowflake (c.l.)	ton	17.00	18.00
Stan-White 325	ton	8.50	11.50
Veroc (c.l.)	**ton**	—	**8.50**
Welco (c.l.)	ton	—	8.50
York White R (c.l.)	ton	—	8.50
Wood Flour	ton	25.50	48.00

FINISHING MATERIALS, SURFACE

Beaco Finishes	gal.	2.10	2.35
Black Out	**gal.**	**4.50**	**8.00**
Shellac, Orange Gum	lb.	.39	.49
VanWax	gal.	1.45	1.50

FLAME RETARDANTS

Chlorowax 70	lb.	.18	.19
Halowax	lb.	.35½	.61½
Zinc Borate 3167	lb.	.1920	.2020
Zyrox	lb.	.76½	.86½

LUBRICANTS, MOLD

Akro Gel	lb.	—	.165
Alipal CO-433	lb.	—	.21
CO-436	lb.	—	.27½
Aquadag	**lb.**	**3.50**	**4.00**
Aquarex D	lb.	—	.78
L	lb.	—	.94
ME	lb.	—	.94
MDL	lb.	—	.33
WAQ	lb.	—	.25
Armid O	lb.	.39	.41
Borax, Granular (l.c.l.)	ton	89.00	94.00
Carbowax 4000	lb.	.31	.32
CD Mold Release A	gal.	—	7.00
B	gal.	—	5.00
Colite Concentrate (dms.)	**gal.**	—	**.90**
Concentrex	lb.	—	.25
Dag Dispersions No. 197	lb.	1.85	2.90
D.C. 7 Compound	lb.	5.13	6.50
D.C. Emulsion No. 7	lb.	1.59	2.07
No. 8	lb.	1.46	1.98
No. 35	lb.	1.46	3.50
No. 35A	lb.	1.46	3.50
No. 35B	lb.	1.46	3.50
D.C. Mold Release Fluid	lb.	3.70	6.00
Dipex	**lb.**	**.14**	**.18**
Dri-Lube	lb.	—	.22
Glydag G	lb.	1.30	2.45
Hawkeye Flake (dlvd.)	lb.	.13¾	.14¾
Igepal CO-430	lb.	—	.39
CO-530	lb.	—	.36
CO-630	lb.	—	.36
Igepon AP-78	lb.	—	.48
T-51	lb.	—	.13½
Kokobace R	lb.	.18	.18½

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LUBRICANTS, MOLD (Cont'd)

Linde Silicone L-45	lb.	3.72	4.80
LE-45	lb.	1.46	2.50
Lubrex	**lb.**	**.25**	**.30**
Lubri-Flo	gal.	10.00	12.00
Migralube	**lb.**	—	**.35**
Mold Lubricant No. 72			
Conc.	gal.	**2.50**	**4.00**
No. 735	gal.	1.26	2.75
No. 769	gal.	1.20	2.60
No. 880	gal.	**1.12**	2.50
No. 856	gal.	2.00	4.00
No. 935	gal.	1.75	3.25
No. 980	gal.	1.65	3.15
Moldeze No. 3	gal.	5.00	6.00
Mold-Brite	**gal.**	—	**1.50**
Mold-Slick	lb.	**.253**	**.271**
Mold-White	**gal.**	—	**2.00**
Monopole Oil MD	lb.	—	.18
Olate Flakes	lb.	.22¾	.23¼
Orvus WA Paste (dms.)	lb.	—	.23
Polyglycol 15-200	lb.	.25	.28¾
E4000	lb.	.31	.37
Prodag	**lb.**	**.28**	**.42**
Purity Flake (dlvd.)	lb.	.17¾	.18¾
Rubber-Flo	gal.	1.25	2.00
Rubber-Glo	**gal.**	—	**.94**
Rusco Mold Paste	lb.	—	.25
Sericite (t.c.l.)	**ton**	**65.00**	**75.00**
SF-92 Silicone Fluid	lb.	3.70	4.22
SM-33 Silicone Emulsion	lb.	1.50	1.68
55	lb.	1.46	2.00
61	lb.	1.46	1.68
Thermalube	**lb.**	—	**.13¾**
Ucon Lubricants	lb.	.26¾	.27¾
Uleo Mold Soap	**lb.**	**.12**	**.23**

LUBRICANTS, RUBBER

Diglycol Stearate Neutral (and SE) (dms.)	lb.	—	.25
Emcol DS-50	lb.	—	.38
RDH-S	lb.	—	.27
Extrud-o-Lube	gal.	—	1.54
G.B. Naphthenic Neutrals	gal.	.11	.18
Ivory Chips	lb.	.18¾	.19¾
Latex-Lube GR (dlvd.)	lb.	.19¼	.20
Propylene Stearate (dms.)	lb.	.68	.78

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.37	.42
Calcium Stearate	lb.	.35	.40
D.C. 4 Compound	lb.	5.13	6.50
D.C. 200 Fluid	lb.	3.70	6.00
Glycerized Lubricant	gal.	—	1.48
Glydag B	lb.	1.50	2.10
G	lb.	1.30	2.45
Hydro-Zinc	lb.	—	.20
Latex-Lube Pigmented (dlvd.)	lb.	.17½	.18½
R-66 (dlvd.)	lb.	—	.16½
Liqui-Lube (dlvd.)	lb.	—	.16¾
N.F. (dlvd.)	lb.	—	.16¾
N.T. (dlvd.)	lb.	—	.16¾
Polyethylene Glycol	lb.	.22	.26
Rexpol	lb.	—	.17
Rubber Free (Concentrate)	gal.	—	1.44
Jel	lb.	.18	.21½
Separex	**lb.**	—	**.25**
Stock Lube	lb.	—	.19
Slab Dip	lb.	—	.16
Wet-Zinc	lb.	—	.22¼
Zinc Stearate	lb.	.37	.42
Z.S.D. Dispersion	lb.	—	.20

MOLD CLEANERS

Actusol (dlvd.)	gal.	1.45	1.65
Alkon (dlvd.)	lb.	.16	.16½
Metso Anhydrous	cwt.	4.85	7.10
Metso 99	cwt.	4.50	6.75
Metso 200	cwt.	6.00	6.75
Metso Granular	cwt.	4.00	6.25
Orvus Extra Granules	lb.	.22½	.23½
Rubber-Sol	gal.	2.97	3.97
Sprex A.C. (dlvd.)	lb.	.17¾	.18¾

PEPTIZING AGENTS

Peptizer P-12	lb.	.95	1.25
Pepton 22 Plasticizer	lb.	.79	.82
RPA 2	lb.	—	.78
3	lb.	—	.47
3 Conc.	lb.	—	.97
5	lb.	—	.59
6	lb.	—	1.58

PLASTICIZERS & SOFTENERS

AA (dms.)	lb.	—	.19½
Acto 500	**lb.**	—	**.09**
Adipol BCA (dms.)	lb.	.47	.47½
2EH	lb.	.44	.47¾
10A	lb.	.44	.47¾
ODY	lb.	.53¾	.54¼
American Pine Tar	lb.	.0410	.0678
Arneel	lb.	.27	.39
Arolene 1980 (c.l.)	lb.	—	.10
Aromatic Plasticizer 10 (and 25)	lb.	.05	.06½
Aromatic Tar	gal.	.0573	.1973

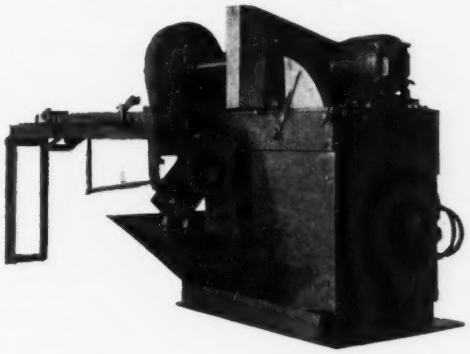
PLASTICIZERS & SOFTENERS (Cont'd)

Bardol	lb.	.02¾	.03¾
B	lb.	.06¼	.06¼
Bayol D	gal.	—	**.382**
F	gal.	—	.52
Beeswax, Bleached	lb.	.70	.75
Yellow Refined	lb.	.57	.62
Bondogen	lb.	.55	.60
B.R.C. No. 20	lb.	.0150	.0175
B.R.H. 2	lb.	.0213	.0351
BRS 700	lb.	.02	.0285
B.R.T. 3	lb.	.0180	.0265
4	lb.	.0250	.0260
7	lb.	.03	.031
B.R.V.	lb.	.0475	.0565
Bunarex Resins	lb.	.06½	.07½
Bunatak AH	**lb.**	**.08**	**.09**
U	lb.	—	.17½
No 90	lb.	—	.09
No. 210	lb.	—	.14
Burgundy Pitch	**lb.**	**.0843**	**.0888**
Butac	lb.	.11¾	.12¾
Butoxyethyl Diglycol Carbonate (dms.)	lb.	.40	.41
Butyl Benzyl Sebacate	lb.	.87	.89
Butyl Carbitol Perlargonate (dms.)	lb.	—	.64½
Butyl Cellosolve Perlargonate (dms.)	lb.	—	.68
Butyl Palmitate	lb.	—	.26½
Butyl Stearate (dms.)	lb.	.24	.25
BWH-1	lb.	.16	.17
Cabflex DDA	lb.	.44¾	.47¾
DDP	lb.	.34	.37
Di-BA	lb.	.43¾	.46¼
Di-OA	lb.	.44¾	.47¾
Di-OP	lb.	.34	.37
Di-OZ	lb.	.52	.54¾
ODA	lb.	.44¾	.47¾
ODP	lb.	.34	.37
Cabol 100	lb.	.02	.07
Califlux 510, 550	lb.	.02¼	.03¼
G.P.	lb.	**.0125**	**.02**
R-100	lb.	.04½	.05¼
TT	lb.	.0170	.0245
Candelilla Wax, Prime	lb.	.74	.77
Capryl Benzyl Sebacate	lb.	.89	.91
Carbowax 4000 (dms.)	lb.	.31	.32
Cardolite 615	**lb.**	**.33¾**	**.36¾**
816	lb.	25¾	28¾
Carnauba Wax, Crude	lb.	.82	1.00
Refined	lb.	.84	1.00
Yellow	lb.	1.16	1.30
Castorwax	lb.	—	.26½
Celluflex (dms.)	lb.	.35	.40
112 (t.c., dlvd.)	lb.	—	.33
179-A (t.c., dlvd.)	lb.	—	.33
179-C (t.c., dlvd.)	lb.	—	.33
179-EG (t.c., dlvd.)	lb.	—	.33
DBP (t.c., dlvd.)	lb.	—	.33
DOP (t.c., dlvd.)	lb.	—	.34
TPP (dms. eqld.)	lb.	—	.39
Ceresine Wax	lb.	.14	.26
Chlorowax 40	lb.	.14½	.15½
CTLA Polymer	**gal.**	.20	.36
Cumar Resins	lb.	.06½	.17
Darex DBP	lb.	.33	.35¾
DOP	lb.	.34	.37
DIOP	lb.	.34	.37
D.B.M.	lb.	.32	.34¾
Degras, Common	lb.	—	.14
Diallyl Phthalate (dms.)	lb.	.47	.52¼
Dibenzyl Sebacate	lb.	.88	.90
Dibutoxethyl Sebacate	lb.	—	.56¾
Dibutyl Phthalate	lb.	.33	.35¼
Dibutyl Sebacate	lb.	.71	.74
Dicapryl Adipate	lb.	.43	.45
Dicapryl Phthalate	lb.	.32	.35¾
Dicapryl Sebacate	lb.	.66½	.68½
Di-Carbitol Phthalate (dms.)	lb.	.42	.42½
Dicyclohexyl Phthalate	lb.	.58¼	.59¼
Diethyl Phthalate (t.c.)	lb.	.25	.27¾
Di-2-ethylhexyl Phthalate (t.c.)	lb.	—	.34
Dihexyl Adipate	lb.	.42	.44
Dihexyl Phthalate	lb.	.33	.35
Dihexyl Sebacate	lb.	.67	.70
Diisobutyl Azedate	lb.	—	.47¾
Di-iso-octyl Adipate (dms.)	lb.	.44¼	.47¾
Di-iso-octyl Phthalate (t.c.)	lb.	.34	.37
Dimethyl Phthalate (t.c.)	lb.	.27½	.30¼
Dimethyl Sebacate	lb.	1.25	1.27
Dinopol	lb.	.37	.38
Dioctyl Phthalate (dms.)	lb.	.34	.37
Dioctyl Sebacate (dms.)	lb.	.66½	.69
D.I.O.P. (dms.)	lb.	.36	.37
Dipolymer Oil	gal.	.33	.48
Dispersing Oil No. 10	lb.	.06	.06¼
Dutrex 6	lb.	—	.02
15E	gal.	—	.10
Elastex 10-P	lb.	.34	.37
50-B	lb.	.27	.30
DCHP	lb.	.59	.60
Emulphor EL-719	lb.	—	.62
Estac	lb.	—	.16
Ethox (dms.)	lb.	.45	.45½
Flexol B-400	lb.	.27	.28
DOP	lb.	.36	.37
TOF	lb.	.47¾	.48¾
3GH	lb.	.45½	.46
3GO	lb.	.54½	.55
4GO	lb.	.35½	.36½
Flexricin P-1	lb.	—	.32
P-4	lb.	—	.31
P-4C	lb.	—	.42½
P-6	lb.	—	.37
P-8	lb.	—	.33

PLASTICIZERS & SOFTENERS (Cont'd)

Fortex (dms.)	lb.	.12½	.14½
Galex W-100	lb.	.15½	.19¼
G. B. Light Process Oil	**lb.**	**.025**	**.0325**
Medium Process Oil	lb.	.03½	.04¼
G. B. Naphthenic Neutrals	gal.	.11	.18
Good-Rite GP233	lb.	.44¾	.47¾
GP261	lb.	.34	.37
Harflex 500 (dms.)	lb.	.31½	.33½
Herron-H.I.	gal.	.16	.27
Herron-Plas	**lb.**	—	**.03¾**
Herron-Wax	lb.	.05¼	.06
No. 23	lb.	.08¼	.08¾
No. 24	lb.	.07¾	.07¾
HSC No. 13	lb.	.27	.30
Hylene B	lb.	.45	.50
C	lb.	.41	.46
D	lb.	.47½	.52½
Indonex 632½ (633½, 634½, 637½)	gal.	.11	.17
Kapsol	lb.	.34¼	.35¼
Kenflex	lb.	.18	.27
Kesscoflex 101 (dms.)	lb.	—	.39
102 (dms.)	lb.	—	.32½
103 (dms.)	lb.	—	.41½
104 (dms.)	lb.	—	.48
105 (dms.)	lb.	—	.33¼
106 (dms.)	lb.	—	.35½
108 (dms.)	lb.	—	.37
109 (dms.)	lb.	—	.36¼
KP 23 (dms.)	lb.	.31	.32
90 (dms.)	lb.	.47	.48
140 (dms.)	lb.	.48	.48½
201 (dms.)	lb.	.58¼	.59¼
220 (dms.)	lb.	.33	.34
555 (dms.)	lb.	.33½	.33¾
Kremol 40	gal.	.36	.46
50	gal.	.39	.49
Kronisol (dms.)	lb.	.35	.35½
Kronitex AA (dms.)	lb.	.35	.36
I (dms.)	lb.	.35	.36
Lanolin, Tech. Anhydrous	lb.	—	.28
Lead Oleate	lb.	—	.30½
Limdol (dms., t.c.)	lb.	.33	.36
2-Mercaptoethanol (drums)	lb.	1.25	1.50
Methyl Laurate	lb.	.25	.27
Methyl Oleate	**lb.**	—	**.20**
Methyl Stearate (dms.)	lb.	—	.30
Montan Wax, Crude	lb.	.13	.14
Monten Wax	lb.	—	.30½
Morflex	lb.	.32	.69½
MR 2088 (dms.)	lb.	—	.19
Natac	lb.	.11¾	.12¼
Nebony Resins (dms.)	lb.	.04	.04½
Neolene 210 (t.c.)	**lb.**	—	**.16**
212 (t.c.)	**lb.**	—	**.14**
220 (t.c.)	**lb.**	—	**.15**
Nerium	**lb.**	—	**.09**
Nevillac Resins (dms.)	lb.	.31	.85
Neville Resins (dms.)	lb.	.12	.18
Nevindene Resins (dms.)	lb.	.15	.18
Nevinol (dms.)	lb.	—	.20
Nuba 1 (and 2) (dms.)	lb.	.05¾	.06¼
3X (dms.)	lb.	.07¾	.08¼
15 (and 30) Oil (dms.)	**lb.**	**.36¼**	**.38**
No. 480 Oil Proof Resin	lb.	—	.18
Ohopex Q10 (dms.)	lb.	.34	.35
R9 (dms.)	lb.	.37½	.37¾
Opalwax	lb.	.37	.38
Ortho-Nitrobiphenyl	lb.	.13	.15
Ozokerite Wax No. 64			
White	lb.	.26	.27
Yellow	lb.	.24	.25
Palm Oil	**lb.**	—	**.11**
Paradene Resins (dms.)	lb.	.06½	.07½
Para Flux (dms.)	gal.	.1925	.2025
2016 (dms.)	gal.	.22	.23
Para Lube (t.c.l.)	lb.	.046	.048
Parmo	lb.	.06	.13½
Pepton 22 Plasticizer	lb.	.79	.82
PG-16	lb.	.38¼	.40
Picco 10 (and 25)	lb.	—	.13½
60 (and 75)	lb.	—	.13
100	lb.	.13	.13½
Piccocizer 30	lb.	.05½	.07
Piccolastic A (and B, C, D, E)	lb.	.28	.29
FT, FHF and FN	lb.	.1815	.1965
I-135	lb.	.22¾	.23¼
Piccolyte S Resins	lb.	.18½	.20
Piccopale Resins	lb.	.12	.13
Piccoumaron Resins	lb.	.06½	.18
Pigmentar	lb.	.0389	.0678
Pigmentaroil	lb.	.0394	.0678
Plastac M	**lb.**	—	**.09¼**
Plasticizer 2286	**lb.**	—	**.26¼**
Plasticizer 4141	lb.	.56¾	.66¾
Plasticizer ODN	lb.	.31	.37
Plasticizer SC	lb.	.54¼	.56¾
Plasticizer W-13	lb.	.37	.38¾
Plasticizer XP-3	**lb.**	—	**.50**
Plastoflex 50	lb.	.34¼	.35¼
55	lb.	.31¾	.32¾
520	lb.	.37½	.38½
VS	lb.	.38¼	.39¼
Plastogen	lb.	.07¾	.08
Plastolein 9050 (c.l.)	lb.	.56	.59
9055	lb.	.35	.38
9058	lb.	.52	.55
9250	lb.	.27	.30
9715	lb.	.35	.38
Plastone	lb.	.27	.30
Polycin 783	lb.	—	.24½
Polycizer 162	lb.	.34	.37
332	lb.	.44¾	.47¾
ED	lb.	—	.56¾

SLICER MACHINE
for
EXTRUDED STOCKS



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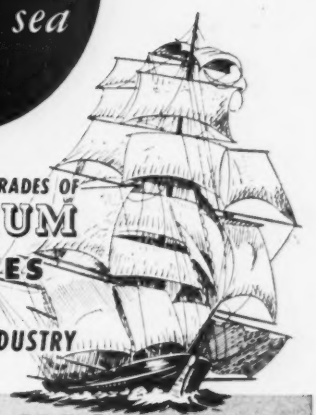

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PLASTICIZERS & SOFTENERS (Cont'd)

Polyco 438	lb.	.32	.34
Polymel C-130	lb.	.19½	.20½
D	lb.	.23½	.24½
6	lb.	.05¾	.07¾
Process Oil C-255 (c.l.)	gal.	—	.22
Propylene Stearate (dms.)	lb.	—	.32
PT 67 Light Pine Oil (dms.)	gal.	—	.60
101 Pine Tar Oil (t.c., dms)	gal.	33½	.44½
400 Pine Tar (600, 800) (t.c., dms.)	gal.	.35	.46
PX-104	lb.	.34	.42
PX-108	lb.	.38	.46
PX-208	lb.	.41½	.49
PX-404	lb.	.60	.68
Reogen	lb.	.13¼	.13½
465 Resin (dms.)	lb.	.07	.07½
Resin 731-C	cwt.	—	15.00
Resin C	lb.	.0225	.0310
Resinex	lb.	.03¼	.03¾
L-4	lb.	.02¼	.03
Rexflex	lb.	—	.15
Rosin Oil	gal.	.54	1.20
R.S.O. Softening Oil	lb.	.03	.05
Rubberol	lb.	—	.25¾
Rubtar	gal.	—	.40
Santicizer B-16	lb.	.52	.54¾
E-15	lb.	.51	.53¾
M-17	lb.	.48	.50¾
No. 107	lb.	.38¾	.39¾
No. 140	lb.	.33	.35¾
No. 141	lb.	.37	.39¾
No. 160	lb.	.31	.33¾
Sherolatum	lb.	.03½	.06
Softener No. 20	gal.	.09	.25
Solarite Resin No. 11	lb.	.16½	.22½
Staflex DBES	lb.	.67½	.68½
DOS	lb.	.68	.69
IXA	lb.	.34	.35
KA	lb.	.37¾	.38¾
Stanolind Petrolatum	lb.	.053	.089
Wax	lb.	.31	.33
Sunny South Burgundy Pitch	lb.	.0980	.1025
Sunny South Pine Tar	lb.	.0389	.0678
Sunny South Rosin Oil	gal.	.58	.87½
Superla Wax	lb.	.34½	.44
Syncera Wax	lb.	.23	.34
Syn Tac (c.l.)	gal.	—	.33
Synthetic Revertant Oil	lb.	—	.16
Tar, Refined	gal.	.12	.17
K-Tarnel NR (t.c.)	lb.	—	.0851
Terpene A	gal.	—	.65
TP-90B	lb.	—	.59
TP-95	lb.	—	.65
Transphalt Resins	lb.	.02¼	.03¾
Triacetin	lb.	.40	.47
Tributyl Phosphate (dms.)	lb.	.52	.53
Tricresyl Phosphate (t.c.)	lb.	.33	.35
Turgum S	lb.	.10	.11
Vanadisets A	lb.	.02½	.07
Vistac No. 1	gal.	1.00	1.21
P	lb.	.18	.18½
Vopcolene 50	lb.	—	.37
Witcizer 100	lb.	.31	.32
200	lb.	.21	.26½
201	lb.	.23½	.29
300	lb.	.35¾	.36¾
312	lb.	.36¾	.37¾
412	lb.	.47¾	.48¾
Witresin—Granular	ton	41.00	43.00
Solid	ton	36.00	38.00

PROCESSING AIDS

Castor Oil, Processed (dms.)	lb.	—	.21½
Refined (dms.)	lb.	—	.19½
Dutrex 7	lb.	.12	.20
ELA	lb.	—	.82
Emcol MAS	lb.	—	.44
Kenflex N	lb.	—	.18
Millrex	lb.	—	.15
Resin No. 510	lb.	.13½	.16½
Zyrox	lb.	.50	.79

PROTECTIVE & STABILIZING AGENTS

Acacia	lb.	.12¼	.21
Alpha Protein	lb.	.24	.28
Ammonium Alginate	lb.	—	1.02
Aroostocrat	lb.	—	.07½
Carob Bean Flour	lb.	—	.46
Casein	lb.	.24	.31
Emcol K-8300 (dms.)	lb.	.19	.20
Ethylene Diamine 68%	lb.	.44	.47
Gum Arabic	lb.	—	.19
Karaya Gum	lb.	—	.25
Locust Bean Gum	lb.	—	.31
Prosein	lb.	.0600	.0630
Rex Compound No. 2801	lb.	—	.15
Stablex B	lb.	.50	.95
K	lb.	.27	.35

RECLAIMING AGENTS

Amalgamator Z-4	gal.	—	.32
Arneen C	lb.	.45	.47
Mixed Crude	lb.	.17	.23
T	lb.	.29	.31
No. 517 H.B. Oil	gal.	.11½	.16½
535	gal.	.22	.27
Burco RA	lb.	.05¾	.08¼
C-6 Oil (and 28, 32)	gal.	.33	.38
C-10 Oil	gal.	.25	.30
C-33	gal.	—	.21½
C-42	gal.	—	.23
Caustic Soda—Flake 76% (c.l., dms.)	cwt.	—	4.10
Liquid 50% (t.c.)	cwt.	—	2.55
Solid 76% (c.l., dms.)	cwt.	—	3.70
Cresylic Acid (99-100%)	gal.	.90	1.23
D-4	gal.	—	.27
E-5	gal.	—	.25
Flake Calcium Chloride (77-80%)	ton	—	27.00
G. B. Reclaiming Oil	gal.	.12	.18
CD-10	gal.	.10	.16
CD-50-U	gal.	.18	.24
Gensol No. 6 (t.c.)	gal.	—	.40
Heavy Aromatic Naphtha	gal.	—	.13¾
LX-77 Reclaiming Solvent	gal.	.21	.33
LX-572 Reclaiming Oil	gal.	.27	.32
LX-777 Reclaiming Oil	gal.	.23	.33
Neo-Fat D-242	lb.	.05½	.07¾
PRR 1	gal.	.15	.35
PT 67 Light Pine Oil (dms.)	gal.	—	.60
PT101 Pine Tar Oil (t.c., dms.)	gal.	.33½	.44½
Q Oil	gal.	—	.28
Reclaiming Oil 3186 (t.c.)	gal.	.28	.38½
Reclaiming Oil 3186-G	gal.	.25	.36½
Reclaiming Reagent No. 1431	lb.	.21	.25
R.P.A. No. 3	lb.	—	.47
RR-10	lb.	—	.36
Soda Ash (c.l., bags)	cwt.	—	1.65
Solvent 534	gal.	.20½	.26½
Solvent Oil 21	gal.	.24	.29
C-42	gal.	.23	.28
Union Solvent 4060-O	gal.	—	.184
X-1 Resinous Oil	lb.	.0210	.0275

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

Atlantic HPC-98	lb.	.0740	.1225
Continental F	lb.	.0740	.1225
Croflex	lb.	.0740	.1225
Dixiedensed (and S)	lb.	.0740	.1225
HX Compact	lb.	.0740	.1225
Kosmobile (and S)	lb.	.0740	.1225
Micronex HPC	lb.	.0740	.1225
Spheron 4	lb.	.0740	.1225
Witco No. 6	lb.	.0740	.1225

Channel, Medium Processing (MPC) (bags)

Atlantic MPC-95	lb.	.0740	.1225
Collocarb	lb.	.0705	.1105
Continental A	lb.	.0740	.1225
Croflex TH	lb.	.0740	.1225
Dixiedensed HM (and S-66)	lb.	.0740	.1225
Huber Arrow TX	lb.	.0740	.1225
Kosmobile HM (and S-66)	lb.	.0740	.1225
Micronex Standard	lb.	.0740	.1225
Spheron 6	lb.	.0740	.1225
Texas M	lb.	.0740	.1225
Witco No. 1	lb.	.0740	.1225

Channel, Easy Processing (EPC) (bags)

Atlantic EPC E-42	lb.	.0740	.1225
Collocarb	lb.	.0705	.1105
Continental AA	lb.	.0740	.1225
Croflex 77	lb.	.0740	.1225
Dixiedensed 77	lb.	.0740	.1225
Kosmobile 77	lb.	.0740	.1225
Micronex W-6	lb.	.0740	.1225
Spheron 9	lb.	.0740	.1225
Texas E	lb.	.0740	.1225
Witco No. 12	lb.	.0740	.1225
Wyex	lb.	.0740	.1225

Channel, Conductive (CC) (bags)

Continental R-40	lb.	.2300	.3000
Dixie 5 Dustless	lb.	.1200	.1900
Dixie Voltex	lb.	.2300	.3000
Kosmink Dustless	lb.	.1200	.1900
Kosmos Voltex	lb.	.2300	.3000
Spheron C	lb.	.1400	.1850
Voltex	lb.	.2300	.3000

Conductive Furnace Black (CFB) (bags)

Aromex 115	lb.	.0890	.1290
Shawinigan Acetylene Black	lb.	.1700	.2600
Vulcan C	lb.	.1100	.1530

Furnace, Fast Extruding (FEF) (bags)

Arovel	lb.	.0600	.1000
Collocarb	lb.	.0590	.0990
Continex	lb.	.0650	.1050
Croflex 50	lb.	.0600	.1000
Dixie 50	lb.	.0600	.1000
Kosmos 50	lb.	.0600	.1000
Philblack A	lb.	.0600	.1000
Statex M	lb.	.0600	.1000
Sterling SO	lb.	.0600	.1000

REINFORCING AGENTS—CARBON BLACK (Cont'd)

Furnace, General Purpose (GPF) (bags)

Dixie 35	lb.	.0500	.0900
Kosmos 35	lb.	.0500	.0900
Sterling V	lb.	.0500	.0900

Furnace, High Modulus (HMF) (bags)

Collocarb	lb.	.0470	.0870
Continex HMF	lb.	.0550	.0950
Croflex 40	lb.	.0550	.0950
Dixie 40	lb.	.0550	.0950
Kosmos 40	lb.	.0550	.0950
Modulex	lb.	.0550	.0950
Statex 93	lb.	.0550	.0950
930	lb.	.0470	.0870
Sterling L	lb.	.0550	.0950
LL	lb.	.0550	.0950

Furnace, Semi-Reinforcing (SRF) (bags)

Collocarb	lb.	.0480	.0880
Continex SRF	lb.	.0450	.0850
Croflex 20	lb.	.0450	.0850
Dixie 20	lb.	.0450	.0850
Essex	lb.	.0450	.0850
Furnex	lb.	.0450	.0850
Gastex	lb.	.0500	.0900
Kosmos 20	lb.	.0450	.0850
Pelletex	lb.	.0450	.0850
NS	lb.	.0450	.0850
Sterling NS	lb.	.0450	.0850
Sterling R	lb.	.0500	.0900
Sterling S	lb.	.0450	.0850

Furnace, Fine (FF) (bags)

Statex B	lb.	.0650	.1050
Sterling 99	lb.	.0650	.1050

Furnace, High Abrasion (HAF) (bags)

Aromex	lb.	.0790	.1190
Collocarb	lb.	.0745	.1190
Continex HAF	lb.	.0790	.1250
Croflex 60	lb.	.0790	.1190
Dixie 60	lb.	.0790	.1190
Kosmos 60	lb.	.0790	.1190
Philblack O	lb.	.0790	.1190
Statex R	lb.	.0790	.1250
Vulcan 3	lb.	.0790	.1220

Furnace, Super Abrasion (SAF) (bags)

Aromex 125	lb.	.1100	.1500
Philblack E	lb.	.1350	.1750
Statex 125	lb.	.1100	.1550
Vulcan 9	lb.	.1350	.1780

Furnace, Super Abrasion, Intermediate (ISAF) (bags)

Dixie 70	lb.	.1100	.1550
Kosmos 70	lb.	.1100	.1550
Philblack I	lb.	.1100	.1500
Vulcan 6	lb.	.1100	.1530

Furnace, Super Conductive (SCF) (bags)

Vulcan SC	lb.	.1800	.2230

Thermal, Fine (FT) bags)

Dixitherm F *	lb.	—	.0700
P-33 (c.l.)	lb.	—	.0550
Sterling FT (c.l.)	lb.	—	.0550

Thermal, Medium (MT) (bags)

Dixitherm M *	lb.	—	.0475
Shellblack *	lb.	—	.0250
Sterling MT (c.l.)	lb.	—	.0350
MT Non-Staining (c.l.)	lb.	—	.0450
Thermax (c.l.)	lb.	—	.0350
Thermax, Stainless (c.l.)	lb.	—	.0450

REINFORCING AGENTS—SILICA

Cab-o-sil (compressed)	lb.	—	.81
Hi-Sil	lb.	.10	.11½
C	lb.	.11	.12½
Santocel	lb.	.62	.64

REINFORCING AGENTS—MISCELLANEOUS

Angelo Shellac	lb.	.39	.49
Darex Copolymer No. 3	lb.	.47	.49
X34	lb.	.42	.44
43G	lb.	.42	.44
Darex Copolymer Latex No. 3-L (and X34L)	lb.	.36½	.39
Durez 12687 (and 12707)	lb.	—	.37
Durez 13355	lb.	—	.29½
Good-Rite Resin 50	lb.	.42	.44
Hetro	lb.	.31½	.32½
Kralac A	lb.	.43	.44

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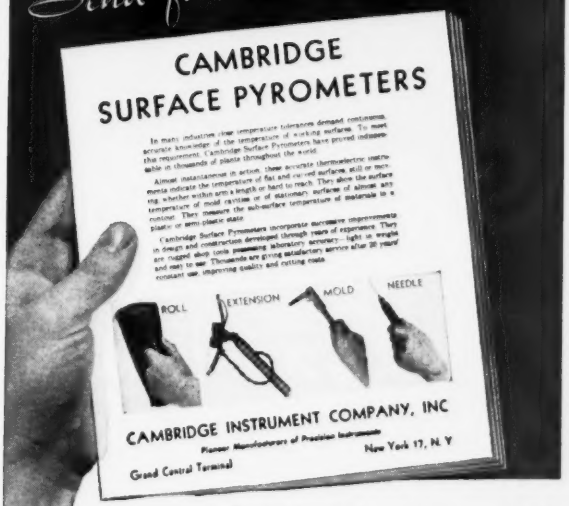

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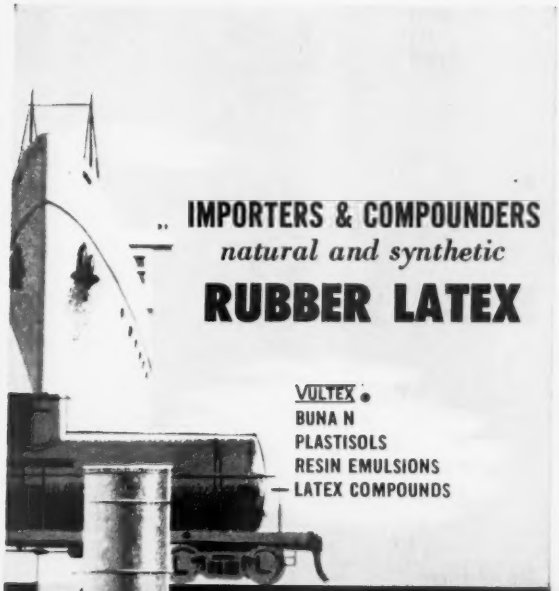

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REINFORCING AGENTS—MISC (Cont'd)

Lampblack	lb.	——	.12
Marbon S and S-1	lb.	.42	.49
8000	lb.	.42	.49
Marmix	lb.	.42	.49
Pliolite Latex 150	lb.	.44	.45
Pliolite Resin-Rubber Masterbatches	lb.	.35	.50
Pliolite NR	lb.	.94	.95
Pliolite S3, S6, and S6B	lb.	.43	.44
Plio-Tuf G75C	lb.	.53	.54
G85C	lb.	.53	.54
Polyco 220	lb.	.18¾	.19¼

RETARDERS

Dutch Boy Normasal	lb.	——	.46
ESEN	lb.	.35	.37
Harcopol 1183	lb.	.70	.74
Retarder ASA	lb.	——	.57
Retarder PD	lb.	.35	.37
Retarder W	lb.	——	.45
Retardex	lb.	.47	.50

RUBBER SUBSTITUTES

Mineral Rubber

38	ton	38.00	40.00
Black Diamond	ton	38.00	40.00
Everlyte	ton	47.00	54.00
Gilsonite, Selects (c.l.)	ton	37.00	38.00
Hard Hydrocarbon (dms.)	ton	46.50	48.50
Herron Flake	ton	——	45.00
Pioneer	ton	35.00	46.00

Vulcanized Vegetable Oils (Factice)

Amberex	lb.	.29	.36
Brown	lb.	.1310	.2200
Neophax	lb.	.1570	.2680
White	lb.	.1480	.2520

Miscellaneous Rubber Substitutes

G.B. Asphaltenes	lb.	.06	.06½
Gilsowax B	lb.	09	.11
Resin No. 1098 (drums)	lb.	——	.62
No. 1198	lb.	.46¾	.49¾

SOLVENTS

Acetone (dlvd.)	lb.	.10½	.11⅛
American Dipentine	gal.	.34½	.70
American Pine Oil	gal.	.86⅝	1.04
Amsco Lactol Spirits (t.c.)	gal.	——	.19
Naphthol Spirits	gal.	——	.19
Mineral Spirits	gal.	——	.17
Rubber Solvent (t.c.)	gal.	——	.18
Solv A (t.c.)	gal.	——	.27½
Solv A-80 (t.c.)	gal.	——	.32½
Solv B (t.c.)	gal.	——	.31
Solv B-90 (t.c.)	gal.	——	.34
Solv D (t.c.)	gal.	——	.32½
Solv E	gal.	——	.31½
Solv F	gal.	——	.32½
Solv F-80	gal.	——	.35½
Special Naphtholite (t.c.)	gal.	——	.18
Special Textile Spirits	gal.	——	.19
Super Naphtholite	gal.	——	.18
Textile Spirits (t.c.)	gal.	——	.19
Amyl Chlorides, Mixed (l.c.l.) (drums)	lb.	.09¼	.10¼
Benzol 90%	gal.	——	.48
Butyl Acetate (t.c.)	lb.	.15	.16
Butyl Alcohol (t.c.)	lb.	.15	.16
Secondary (dlvd.)	lb.	.13	.14
Tertiary (dlvd.)	lb.	.14	.15
Carbon Bisulfide, Tech	lb.	.05¼	.08½
Carbon Tetrachloride	lb.	.08¼	.09¼
Cosol 1	gal.	.37	.43
Cosol 2	gal.	.42	.48
Cyclohexane	gal.	.70	.72
Cyclohexanone	lb.	.25	.27
Diacetone, Pure (dlvd.)	lb.	.14	.15
Dichlorethyl Ether (dms.)	lb.	.14½	.15
Formal (dms.)	lb.	.30¼	.31¼
Dichloropentane	lb.	.04¾	.14¾
Dicom	gal.	.30	.42
Halowax Oil	lb.	.28	.41
Heptanes (t.c.)	gal.	.17	.22
Hexalin Cyclohexanol	lb.	.20	.22
Hexanes (t.c.)	gal.	.17	.22
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.52	.59
Ether, Ref. (dlvd.)	lb.	.07	.08
Mersol	gal.	.43	.79
Mesityl Oxide (dlvd.)	lb.	.13½	.14½
Methyl Acetone, Syn. (dms., dlvd.)	gal.	.66½	.72¼
Methyl Ethyl Ketone	lb.	.13	.14
Methyl Isobutyl Ketone (dlvd.)	lb.	.15	.16
N-5 Pentane Mix. (t.c.)	gal.	——	.13¼
N-6 Hexanes (t.c.)	gal.	——	.14½
N-7 Hexanes (t.c.)	gal.	——	.13½
Penetrell	gal.	.34½	.70
Petrolene (t.c.)	gal.	——	.13125
Picolines, Alpha, Refined	lb.	.44	1.00
Mixed	lb.	——	.34
Proprietary Solvent (dms.)	gal.	.51	.72
Propyl Acetate (t.c., dlvd.)	lb.	——	.10¾
Alcohol (t.c., dlvd.)	lb.	——	.10

SOLVENTS (Cont'd)

PT 150 Pine Solvent (dms.)	gal.	——	.44
Pyridine, Refined	lb.	.95	1.05
Quinoline	lb.	.60	1.45
Rubber Solvent (t.c.)	gal.	——	.16
Rubsol (t.c.)	gal.	——	.11875
Skellysolve B (Hexanes) (t.c.)	gal.	——	.158
C (Heptanes) (t.c.)	gal.	——	.151
E (Octanes) (t.c.)	gal.	——	.165
R (Solvent Naphtha)	gal.	——	.129
Solvent, Crude, Light	gal.	.19	.28
Solvesso 100 (t.c.)	gal.	.33	.37
150 (t.c.)	gal.	.33	.37
Sunny South Dipentine	gal.	.34½	.70
Sunny South Pine Oil	gal.	.86⅝	1.04
Sunray	gal.	.1140	.1600
Toluene (drums)	gal.	——	.28
Toluol (t.c.)	gal.	——	.35
Trichlorethane	lb.	.13	.13½
Triglycol Dichloride (dms.)	lb.	.63	.64
Union Thinner 1	gal.	——	.183
3	gal.	——	.183
5	gal.	——	.173
7	gal.	——	.173
150-W Hi-Flash	gal.	——	.41
Xylol	gal.	.35	.45

STABILIZING AGENTS (for Vinyl Resins)

Advastab No. 21	lb.	——	1.08
Barca 10	lb.	——	.80
Barium Stearate	lb.	.37	.42
Basic Silicate White Lead	lb.	.17¾	.18¾
Bunatak Polymer No. 780	lb.	——	.04
No. 5514	lb.	——	.35
BVS	lb.	——	.73¾
Calcium Ricinoleate	lb.	——	.48
Cadmium Stearate	lb.	1.40	1.44
Calcium Stearate	lb.	.35	.40
Dutch Boy DS-207	lb.	——	.54
Plumb-O-Sil A	lb.	——	.29¾
B	lb.	——	.31¾
Tribase	lb.	——	.27½
Dythal	lb.	——	.39½
Ferro 120 (dms.)	lb.	.73¼	.83¼
121 (dms.)	lb.	.68	.78
200 (dms.)	lb.	1.33	1.43
211 (dms.)	lb.	.65	.75
221 (dms.)	lb.	1.51	1.61
541 (dms.)	lb.	.35½	.45½
541A (dms.)	lb.	.81¾	.91¾
620 (dms.)	lb.	——	.77½
700 (dms.)	lb.	.48¾	.58¾
900 (dms.)	lb.	1.02¾	1.12¾
903 (dms.)	lb.	.65	.75
909 (dms.)	lb.	1.02¾	1.12¾
920	lb.	——	.98
931 (dms.)	lb.	.75¾	.85¾
1820 (dms.)	lb.	.90	1.00
Harshaw 1-V-3	lb.	.43	.58
1-V-4	lb.	.74	.89
2-V-4	lb.	1.04	1.29
2-V-7	lb.	1.19	1.34
2-V-8	lb.	1.40	1.55
5-V-1	lb.	.41	.56
5-V-2	lb.	.44	.59
7-V-1	lb.	.90	1.05
7-V-2	lb.	.95	1.15
8-V-1	lb.	1.18	1.33
9-V-1	lb.	.84	.99
12-V-5	lb.	.90	1.05
128-V-5	lb.	.86	1.01
Lead Stearate, Precip.	lb.	.32	.39
Fused	lb.	——	.37
Lithium Stearate	lb.	.62	.67
Modicol N	lb.	.42	.42½
S	lb.	.30⅞	.31⅜
Sodium Silicates	cwt.	1.00	5.25
Stabelan F	lb.	1.35	1.50
XL	lb.	.55	.65
GL	lb.	1.25	1.40
HR Liquid	lb.	.67	.75
HR Paste	lb.	.85	.95
HR Powder	lb.	.95	1.05
Stabilizer No. 3	lb.	——	1.95
Stabilizer No. 42	lb.	——	.85
Stabilizer No. 52	lb.	——	1.95
Stabilizer No. 89X	lb.	——	.75
Stabilizer No. 143	lb.	——	.85
Stabilizer BC-12	lb.	——	.90
Stabilizer B-5	lb.	——	.70
Sodium Silicates	cwt.	1.00	5.25
Stabilizer CH-14	lb.	——	.65
Stabilizer CH-20	lb.	——	.65
Stabilizer E6B	lb.	——	.95
Stabilizer E-49	lb.	——	.60
Stabilizer E-98	lb.	——	.55
Stabilizer G-1	lb.	1.25	1.40
Stabilizer HR	lb.	.85	.89
Stabilizer ICX	lb.	——	.63
Stabilizer L	lb.	——	.60
Stabilizer OM-10	lb.	——	1.95
Stabilizer OM18	lb.	——	3.25
Stabilizer SN	lb.	——	.48
Stabilizer V-1-N	lb.	——	.43
Stabilizer VL-3	lb.	——	1.00
Stabilizer V-7939	lb.	——	.60
Staflex OY	lb.	——	1.20
QXMA	lb.	——	.70
Staycin 1	lb.	——	.65
Stayrite 10	lb.	.32	.37
P-10	lb.	.39	.44
15	lb.	.53	.57
20	lb.	.37	.42
22	lb.	1.40	1.44

STABILIZING AGENTS (Cont'd)

Stayrite 25	lb.	.35	.40
70	lb.	——	.70
80	lb.	——	.70
90	lb.	——	.70
Vanstay 1	lb.	.33	.35
H.T.	lb.	.90	.92
S	lb.	.65	.70

STIFFENING AGENTS

Calco S.A.	lb.	.85	.88

SUN CHECKING AGENTS

Allied AA-1144	lb.	.23	.24
AA-1177	lb.	.15½	.16½
Antisol	lb.	——	.23
Antisun (Chipped)	lb.	.15½	.17½
(Slabbed)	lb.	.15	.17
Heliozone	lb.	.26	.27
NBC	lb.	——	1.55
Sonolite 100	lb.	.21	.23
127	lb.	.17	.19
Sunproof	lb.	.30	.31
713	lb.	.25	.26
Improved	lb.	.25	.26
Super	lb.	.40	.41
Jr.	lb.	.20	.21
Tonox	lb.	.52	.54

SURFACE ACTIVE AGENTS

Aquarex D	lb.	——	.78
MDL	lb.	——	.33
ME	lb.	——	.94
NS	lb.	——	.60
SMO	lb.	——	.50
WAQ	lb.	——	.25
Emulphor EL-620	lb.	——	.39½
Igepal CO-730	lb.	——	.36
CO-850	lb.	——	.36
CO-880	lb.	——	.36
Igepon CN-42	lb.	——	.25
T-77	lb.	——	.49
Sellogen Gel	lb.	——	.12¾

TACKIFIERS

Arcco 620-32B	lb.	.20	.21
716-30	lb.	.18	.19
1041-21	lb.	.16½	.17½
Galex (drums)	lb.	.15½	.18
Indopol H-300	gal.	1.00	1.21
Koresin	lb.	——	.95
Liquid Rubber Flux	lb.	——	.14
Nilox (c.l.)	cwt.	——	14.50
Resin V	lb.	——	.23½
Rubtack	lb.	——	.12
Synthol	lb.	——	.24¾
Tackifier 1041-21	lb.	.16½	.17½
Vistac No. 1	gal.	1.00	1.21
A	lb.	.21½	.22¼
Zirex (c.l.)	cwt.	——	14.75

THICKENERS (FOR LATEX)

Alcogum AN-6	lb.	——	.05
AN-10	lb.	——	.08½
Betanol (drams)	lb.	——	.70
Emulsorex No. 5	lb.	——	.35
Good-Rite K-702	lb.	.34½	.35
K-704	lb.	.21	.22
K-705	lb.	.31	.32
K-707	lb.	.18	.19
K-708	lb.	.29	.30
K-710	lb.	.15	.16
Modicol VD	lb.	.13⅞	.14⅜
VE	lb.	.13⅞	.14⅜
Polyco 296 BT	lb.	.15	.16
296-N	lb.	.15	.16
530	lb.	.15	.16
Propylene Laurate (dms.)	lb.	.57	.67
Sodium Silicate, 41°/1:3.2	cwt.	1.00	2.10

VULCANIZING AGENTS

Selenium

Vandex	lb.	——	6.00

Sulfur

Aero Brand	cwt.	——	2.40
Blackbird (c.l.)	cwt.	——	2.85
Cloud (c.l.)	cwt.	——	2.80
Crystex	lb.	.19¼	.23
Darex Dispersed Sulfur	lb.	.14	.16
Devil A (c.l.)	cwt.	——	2.40
Dispersed Sulfur	lb.	.14	.16
Insoluble Sulfur 60	lb.	12½	.13
Ko-Blend IS	lb.	——	.38½
Mist (Wettable) (c.l.)	cwt.	——	4.00
Spider (c.l.)	cwt.	——	2.80
Star (c.l.)	cwt.	——	3.25
Sulfasan R	lb.	——	1.50
Tire (c.l.)	cwt.	——	2.40
Tube (c.l.)	cwt.	——	3.25
Vultac 2	lb.	.47	.74
3	lb.	.51	.78

Tellurium

Telloy	lb.	——	2.50

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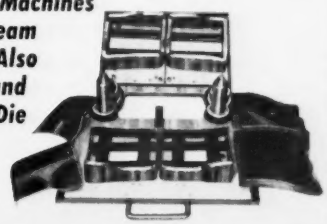

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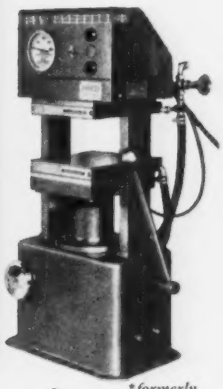

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Advawet No. 10	lb.	—	.20
No. 33	lb.	—	.48
Aerosol 18	lb.	—	.40
AY	lb.	1.00	1.20
MA 80%	lb.	.67	.72
OT 75% Aqueous	lb.	.63	.68
OT 100%	lb.	1.00	1.20
Alrosol (dms.)	lb.	—	.40
Alrosperse	lb.	—	.18
Areskap 50	lb.	.30	.38
Dry 100	lb.	.60	.72
Aresket 240	lb.	.30	.38
Dry 300	lb.	.60	.72
Aresklene 375	lb.	.42	.57
Armacs	lb.	.28	.77
Arquads	lb.	.24	.60
Emcol 5100 (dms.)	lb.	—	.37
5130 (dms.)	lb.	—	.37
Etho-chemicals	lb.	.26	.58
Kessco E-122 (dms.)	lb.	—	.49
Kreelon 8G (dms.)	lb.	.28	.30
Lecithin	lb.	.13	.17
Modicol N	lb.	.42	.42½
S	lb.	.30⅞	.31⅜
Orvus AB Granules	lb.	.16	.17
Nekal NS	lb.	—	.28

WETTING AGENTS (Cont'd)

Nopco 1187-X	lb.	.15	.16
Parnol	lb.	.13	.18
Selapon Gel	lb.	—	.13
Santomerse D	lb.	.44	.65
S	lb.	.13	.25
Sotapon SF-73	lb.	—	.18
SF-78	lb.	—	.30
Sorbit P	lb.	—	.28
Stablex G	lb.	.50	.70
Tergitol 4 (dms., dlvd.)	lb.	.30	.31
7 (dms., dlvd.)	lb.	.43	.44
O8 (dms., dlvd.)	lb.	.30	.31
P28 (dms., dlvd.)	lb.	.18½	.19
Trenamine W-30	lb.	—	.15
Vultamol	lb.	—	.17½
Wetsit Conc.	lb.	.25	.28

MISCELLANEOUS CHEMICALS

Aquarex G	lb.	—	.21
Aquasperse 30	lb.	—	.11
Arccopel W-18	lb.	—	.18
Copper Inhibitor X-872-L	lb.	—	2.01
D-Tac	lb.	—	.22
2-Ethylhexanol	lb.	.25½	.26½
Fura-Tone Resin 1226	lb.	.41	.43

MISCELLANEOUS CHEMICALS (Cont'd)

Gen-Tac Resin	lb.	—	.42
MODX	tons	.32½	.34½
Nullapon BF-12	lb.	—	.20½
BF-13	lb.	—	.26½
BF-78	lb.	—	.61½
Para Resin 2457	lb.	.04	.04½
2702	lb.	.04	.04½
2718	lb.	.04	.04½
Pigmented Filmite (dlvd.)	lb.	—	.16¾
Resorcin, Tech.	lb.	.77½	.78½
Rio Resin	lb.	.60	.62
Rongalite CX	lb.	—	.22½
Sherosope F	lb.	.17	.17¼
F-445	lb.	.17	.17¼
L	lb.	.18	.18¼
N	lb.	.18	.18¼
T	lb.	.18	.18¼
Sublac Resin PX-5	lb.	.23½	.24½
Sulfasan R	lb.	—	1.50
Synpep	lb.	.54	.60
Thiokol LP-2	lb.	.96	1.06
LP3, LP32, LP33	lb.	.96	1.06
LP8, LP38	lb.	1.25	1.37½
Tysonite	lb.	.24	.24¾
Vanfre	gal.	2.50	3.00

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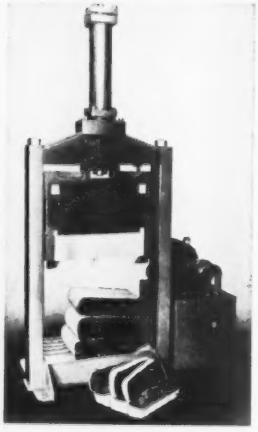

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GENERAL MANAGER—PLANT MANAGER. Graduate Chemical Engineer, age 48, with 10 years experience as General or Plant Manager and 16 years compounding experience in mechanical rubber industry with major companies, is interested in change which includes top management responsibilities or possibly technical sales representation. Personable, reliable, responsible and with excellent experience in all phases of operations. Address Box 896-P, RUBBER AGE.

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LATEX SALES. Young man familiar with GR-S, natural, and neoprene compounding and former works manager of large latex plant seeking position in latex sales. Wide variety of latex experience that should prove valuable in competitive selling. Address Box 908-P, RUBBER AGE.

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LATEX FOAM CHEMIST to take full charge of compounding, control, development in modern, medium sized latex foam plant. Permanent opportunity for alert, capable executive. Compensation commensurate with experience. Interest considered after competence is proven. All replies confidential. Our organization knows of this ad. Address Box 899-W, RUBBER AGE.

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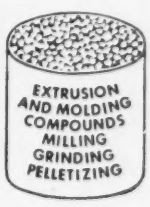

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